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TECHNOLOGY NEWS

Compiled by Cindy Krushenisky from AP and staff reports

X Marks The Spot

Make way, ISDN (Integrated Services Digital Network). There's a new pipeline to the Internet called Digital Subscriber Line, or DSL, that ordinary consumers may be using within the next five years.

DSL technology uses digital signals to transfer data and requires a special hookup at the telephone company and at the user's computer. DSL is more commonly referred to as xDSL, with the "x" representing the numerous variations of DSL. For instance, there's one version called SDSL (symmetrical DSL), while another is RADSL (rate adaptive DSL). The distance over which the different types of xDSL can transfer data varies from several hundred feet to tens of thousands of feet.

xDSL is the telephone companies' answer to the high-speed cable modem option being developed by cable companies. It can transfer from several hundred kilobits to several megabits at a time. That's pretty fast when you consider a basic rate ISDN connection can transfer about 128 kilobits per second (Kbps), and ordinary analog modems can transfer 33.6Kbps. In fact, xDSL can work as fast as a T1 line, transferring about 1.5 megabits per second (Mbps) and even faster. Such breakneck speeds are what's needed for videoconferencing and video-on-demand over the Internet.

The market research firm Dataquest says users will see a lot of xDSL technology in the years to come. It's predicting that revenue from sales of xDSL equipment will reach \$2.5 billion by 2000. However, standards need to be further determined first, and the price of the hookups is still too high for consumer's pocketbooks. That's expected to change over the next year, with prices dropping to a range in which xDSL can be targeted primarily at residential consumers and small businesses. ■

Bombs Away



IBM is about to build the world's most powerful thinking machine. The "ultra-supercomputer," which will operate 300 times faster than any existing computer, will give the government a way to simulate nuclear explosions without actually blowing up bombs.

The computer, known as "DOE Option Blue," is expected to do 3 trillion operations per second and work with 2.5 trillion bytes of memory. (Current supercomputers work with about 10 billion bytes.) All this power lets scientists create mathematical programs that test the performance and deterioration of the nation's stockpile of nuclear weapons without ever detonating them.

IBM planned to build the ultrasupercomputer before even discussing the contract with the U.S. Energy Dept., but the deal accelerated that development by about 18 months. The Option Blue computer is expected to be installed by 1998 at the Lawrence Livermore National Laboratory in California. It also will connect to other national labs, so additional scientists can use the machine. Other

In Due Process



The National Basketball Association is hitting the courts again, but this time the shots will be fired in front of a different kind of bench. The NBA has filed a lawsuit against

America Online and Stats Inc. for using game scores and data without permission. (Stats Inc. supplies AOL with the information.) The NBA wants to block the online service from using real-time information on its games and is also seeking damages. The suit is similar to one the NBA won against Motorola this summer. In that ruling, a federal judge said Motorola could not put scores on a handheld pager that simulates action during games.

Singapore motorists who commit minor offenses may be able to skip their court appearances and head to machines that let offenders plead guilty and pay fines electronically. It's the city-state's latest effort to save judicial time and expenses. Users press a "yes" button on the machines for minor offenses, such as illegal parking, making illegal turns, and speeding. To pay fines, offenders will use cards similar to credit cards to make cashless payments. The fines administered via machine will be lower than those levied by courts, but the machines are to be used only by first-time offenders, and they will not accept an innocent plea. ■

uses for DOE Option Blue might include measuring the effects of car crashes without really crashing cars, analyzing disease molecules, designing drugs to combat diseases, or modeling global weather and how human activities might affect it. ■

The Online Addict

She used to be a homemaker with a nice family life. Then she went online. She began spending lots of time in an online chat room where she could meet other users through typed messages. The conversations made her feel attractive and interesting. She spent up to 12 hours a day online. She stopped cooking, cleaning, and playing golf with her husband. When he finally demanded that she pay more attention to him and the couple's two daughters, saying, "It's the computer or me," she chose the computer.

Psychologist Kimberly Young of the University of Pittsburgh says this is an extreme case, but such online addiction does seem to exist. Young is studying psychological dependence on Internet use. She's found that dependent users range in age from 14 to 70 and have reported spending an average of 38.5 hours a week on the Internet for personal reasons, compared to an average 4.9 hours amassed by a nondependent group she is also studying.

Fifty-eight percent of study participants who Young deemed dependent said their online habits had caused severe impairment in

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their academic lives, and more than half said the same thing regarding their personal relationships, finances, or jobs. Some critics have made light of the idea of Internet addiction, saying the behavior is a symptom of some other problem in a person's life. Of course, Young says, her study is still preliminary, and she has yet to determine how common Internet addiction might be. ■

Interactive Window Shopping



Window shopping as you know it could change from passive browsing to interactive buying. MicroTouch Systems recently introduced a touch screen that can sense a touch through one inch of glass, opening up all sorts of opportunities and uses. For instance, merchants could place a ThruGlass touch screen system next to a storefront window for customers to browse through catalogs, see product demos, or order merchandise online. And the store owner needn't worry about the weather or vandals.

From the user's perspective, it will be no different from using any other touch screen. They touch the glass in front of a screen button or hot spot to interact. The touch screens project a low-voltage field through the window glass, and when shoppers touch the window, ThruGlass detects minute changes in the field. ■

Traffic Trials

Some Seattle motorists are getting a SWIFT kick in the laptop to improve commuter traffic. A select group of about 800 drivers is taking an online program for a test drive to better avoid traffic jams. Participants will get traffic information via a laptop computer, a display screen on a car radio, or a wristwatch in order to help them get around better and stop the city from having to build new highways.

The system, called Seattle Wide-Area Information for Travelers, or SWIFT, uses a mix of technology, including FM audio bands and computer software. For example, users with a laptop could click a Seattle-area map to get information about accidents or road speeds. Users might get accident reports via codes on a watch or pinpointed on a map display through a special car radio.

SWIFT gets its information from state Department of Transportation computers, Metro Traffic Control, and the city-county Metro bus system. The \$7.5 million experiment is sponsored by the state and federal government and partly by private backers. Supporters hope the test will determine whether people like the system, how well it works, and what consumers would pay for the system if it were available through retail channels. ■

HDTV On The Air

The first high-definition television (HDTV) channel is on the air. The Model HDTV station, WHD-TV, which began transmitting at the end of July, is funded by equipment manufacturers and about

250 television stations nationwide. The experimental station broadcasts out of a Washington, D.C., host station, WRC-TV, which is owned and operated by NBC.

HDTV is a new kind of television system that generates images that are crisper and clearer than conventional television pictures and will bring hundreds more channels into homes. In the United States, the system will incorporate digital broadcasting signals. (Current standards use analog signals.) Therefore, HDTV will require digital transmission equipment and television sets to receive images.

WHD-TV will continue to make technical measurements of the signal until spring of 1997, when actual broadcasts of regularly scheduled programming will begin. Currently, the HDTV television sets are expected to be available to consumers in 1997. ■

Animal House Goes High-tech



Toga parties and food fights may give way to Internet access and computer centers as what distinguishes the frat house of the future. Greek Row may never be the same since Microsoft co-founder Paul Allen spent \$3.1 million to turn Phi Kappa Theta at Washington State University into a high-tech house.

Each bedroom in the four-story house in Pullman, Wash., has built-in jacks to transmit voice, data, and cable television, as well as link the occupants to the Internet. Each room has an individual climate control system, which also provides the outside temperature to help with appropriate dressing. Phi Kappa Theta has the only frat house on campus with an elevator, making it fully accessible to the handicapped. Each room also has a business-style television system with an intercom, and the computer center contains six high-speed Gateway 2000 Pentium computers. The parking lot has an underground heating system equipped with sensors triggered by cold to ensure the lot stays ice-free during the winter. Even with all this, the monthly cost for residents will be cheaper than that in most houses because Allen donated the building and there is no mortgage to pay.

Allen attended WSU and was a member of Phi Kappa Theta in the early '70s before dropping out to join boyhood friend Bill Gates, a Harvard dropout, in founding a profitable little business known as Microsoft. Of course, the house isn't the end of Allen's high-tech vision and generosity. He also donated \$300,000 to equip all the other fraternities and sororities on campus with 12-port, high-speed computer connections. By the end of September, they'll be linked to WSU's fiber-optic network and its computers. ■

Are U.S. Secrets Safe?

Despite rumors of lax Internet security and legions of hungry hackers, the U.S. government continues to rely on the 'Net to transport top-secret information. Physicists at Sandia National Laboratory, a Livermore, Calif., nuclear weapons lab, admit they trust encryptors to electronically scramble information about hydrogen bombs and other data.

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The reason, they say, is because any other means would be too expensive. The encryptors, which are designed to make message indecipherable to anyone who intercepts them, are made by companies such as Motorola and GTE and certified by the National Security Agency (NSA).

The NSA employs very secure algorithms that are similar to those used by electronic-fund-transfer transactions. Even if spies get the information, Sandia officials say they will have to store it until new technology lets them break the code. Richard Palmer, a Sandia physicist, says they've asked what happens if someone cracks the code in 15 years. Palmer says the NSA's reply was, "Don't worry." ■

Online Shakedown



The online industry has found that the plugged-in world may be on shaky ground. Although America Online (AOL) had profits that more than tripled to \$16.1 million in its fiscal fourth quarter, the profit amounted to 14 cents per share, which was slightly below Wall Street forecasts of 16 cents per share. (The profit numbers figure in legal charges the company procured.) Expected subscriber numbers also fell short, with 6.2 million by the end of June instead of the anticipated 6.3 million. Another popular online service, CompuServe, is experiencing its own shortcomings. Profits are down, and the price of its stock keeps dropping. One stockholder was unhappy enough to file a suit against the company this summer for not disclosing the stagnant subscriber numbers and finances.

Online services are no longer the only online way for people to get their information or chat with other users. Users can get direct Internet access through Net service providers and find the services and information themselves, often for more affordable rates.

Online services may have to undergo great changes to survive the next couple of years. One possibility is a buyout by a bigger organization. But who would buy a troubled online service? The telephone companies, of course. Online services make money from time you spend online, using phone lines. The telephone companies don't want to lose that income, and if they own the online services, they may be better able to make the online rates more competitive.

Although the numbers are leveling out now, the recent surge in the number of online users created a problem that's also faced by Internet providers. With more people relying on the services for work and communication, the pains are more noticeable than ever. Take, for example, the 18-hour blackout that occurred at AOL this summer after it attempted to add new software and switches. And when there was a torrential demand for information about Hurricane Bertha this summer, the overwhelming access crashed a government World Wide Web site.

Such troubles may be turning people away, allowing for some of the stagnation in subscriber numbers. But industry officials propose that online users are spoiled by the reliability of the phone system. Most of us forget that it took decades for our telephone system to develop. In fact, some analysts compare the AOL blackout with the January 1990 national disruption of AT&T's long-distance network,

which also occurred while technicians were adding new software. Now when changes are made at AT&T, they're made with the planning and precision of a military maneuver. The trouble also gave a boost to new companies that broker phone service to large companies; if one carrier goes down, service is switched to another. Perhaps, analysts say, this is what must happen to the online community. To keep up with high expectations, they'll have to. ■

Tech Shorts



Mercedes-Benz and IBM executives have agreed to work together on future electronics products for Mercedes vehicles. Although cars and trucks now typically have many electronics systems running climate and engine controls, IBM and Mercedes say they want to develop an overall system that could monitor all the functions. They say they would also like to develop a computer that could connect a car to computer networks to deliver traffic and business information or E-mail.

E.S.P. Electronics wants to give you the best seat in the house. The company recently debuted a 360 Degree Optical Technology at the 10th Annual Invention Convention in Pasadena, Calif. The technology projects two-dimensional images into space, where they can be viewed continuously from any point in a 360-degree surrounding area. Although the product is patented, the company is still looking to raise capital. The technology may also work for stadium scoreboards, video arcades, and teleconferencing.

If learning isn't enough of a reason for your kids to do their homework, how about a little cash? Children's Software Press, a software newsletter, is sponsoring a nationwide homework contest for kids ages 8 to 14 based upon computer projects. The contest began in September but will run monthly until June 1997. Projects can include book reports, lab write-ups, and multimedia presentations, but they must have been completed for a school assignment. Prizes include a \$50 U.S. Savings Bond, software, and reference books. Entry forms can be downloaded from the Children's Software Press Web site at <http://www.ultra.net/~jengel/csp/> or by writing Children's Software Press at 720 Kuhlman Road, Houston, TX 77024.

The chicken/egg situation has not improved for Digital Video Disc (DVD), a new type of storage for data and movies for PCs and television. Some manufacturers are hesitant to release their DVD players by the end of the year because of the lack of available DVD software. DVDs, which are the same physical size as CD-ROMs, can store up to 17 gigabytes of information, compared to the 600MB of ordinary CD-ROMs. Sony, one of the technology's developers, says it won't release its players until next spring, although manufacturers such as Matsushita Electric, Toshiba, and Hitachi still plan to introduce their players by December. ■

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NOVICE NOTES



How To Never Buy Diskettes Again

Every computer owner gets them. They sneak into homes in boxes, envelopes, and magazines. Some are carried in by small children and unwitting adults. If ignored, they will consume desk, drawer, and floor space, gradually taking control of an office or home. Fortunately, you don't need an exterminator to control the free diskettes you receive in the mail: Just format them.

Diskettes, like chalk boards, can be wiped clean of unwanted data and used again and again for personal data-storage purposes. The process that prepares and programs the diskette to accept and organize new data is known as **formatting**. All you need is a diskette, a computer, and maybe a piece of tape.



1. Look at the backside of the 3.5-inch diskette—the side that has a silver metal disc in the center of it. In the upper-left corner, you should notice a small hole and a sliding switch. When the hole is exposed, the diskette is write-protected. This means you can't record new data on the diskette, nor can you erase data from the diskette. To format the diskette, you need to remove the write-protection. Simply slide the lever to the down position, making sure the switch covers the hole. (See the illustration for details.)

Some manufacturers purposely leave the slider off, presumably to discourage consumers from erasing the data on the diskette. Remedy this situation by covering the hole with a small piece of tape. Make sure the tape is applied smoothly so that it won't cause problems in your diskette drive.

2. Insert the diskette in the diskette drive. If you use Windows 3.1, see step 3. Windows 95 users should skip to step 4. DOS users skip to step 5. OS/2 users skip to step 6.

3. Open File Manager in Windows 3.1. From the Disk menu, select the Format Disk option. Make sure the diskette location and capacity are correct, then click the OK button. Verify that you want to format the diskette. When formatting is complete, it will ask whether

you want to format another diskette. Click the No button. Skip to step 7.

4. Open My Computer in Win95. Right-click the 3 1/2 Floppy (A:) icon and select the Format command. Make sure the capacity is correct, then left-click the Start button. When formatting is complete, left-click the Close button. Skip to step 7.

5. Type format a: at the DOS prompt and press ENTER. Press ENTER again to start formatting. When formatting is complete, press ENTER, type N, and press ENTER. Skip to step 7.

6. Left-click the Diskette icon on the OS/2 LaunchPad. Left-click the right corner of the Drive A—Icon View window and select the Format Disk command. Left-click the Format button. When formatting is complete, left-click OK. Left-click the Cancel button in the Format Disk window.

7. Remove the diskette from the drive and enjoy using your free diskette just as you would use any other. Put a blank label or a piece of masking tape on the front of the diskette so that you can list the data recorded on it.

If you find you have too many formatted diskettes, check out the 101 Uses For AOL Disks at <http://www.safari.net/~pam/aoldisks/index.html>. Among the more creative options listed at this site are reason No. 11—Room dividers for hamsters; reason No. 61—Add water and special plant life to make a Chia-Disk; and reason No. 77—Put them in your shirt pocket to make you look smart. ■

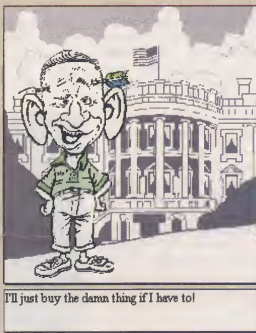
Campaign Caricatures

Cartoon-O-Matic Election '96 gives you the chance to poke fun at the candidates a few more times before the elections. The program lets you create caricatures that reflect your personal opinion of Bill, Bob, Ross, and Hillary. But you'd better get your fill of the fun now because you'll have to wait four more years before you get the chance to do it again!

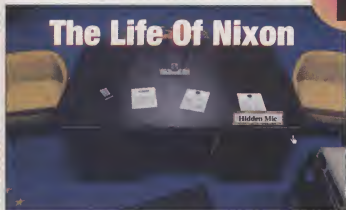
Election '96 for Windows 95 can be purchased directly from nFX Corp. for \$14.95.

For More Information:

Cartoon-O-Matic Election '96
nFX Corp.
(800) 445-9522
(408) 748-9200
<http://www.nfx.com> ■



The Life Of Nixon



A tour through President Nixon's Oval Office reveals the location of the hidden microphones in Nixon: The CD-ROM.

From the vantage point of nearly a quarter century since President Nixon's resignation and two years after his death, *Nixon: The CD-ROM* provides an honest, respectful, and comprehensive look at the life of one of the 20th century's most intriguing politicians. The vast amount of factual and theoretical evidence presented in this CD-ROM lets users draw their own conclusions about the triumphs and failures of America's 37th president. And in case anyone hesitates in reaching a conclusion, the program tastefully presents Oliver Stone's two cents on the subject.

Users who are unfamiliar with the specifics of Watergate and the Nixon presidency will enjoy the virtual tour of the White House. This multimedia exploration guides users through nine rooms of the presidential estate, including the Oval Office; the President's Office; the offices of John Dean, H.R. "Bob" Haldeman, and John Ehrlichman; and the small locker-room used as a taping room. There's also a special tour through the "plumbing room," a small office in which the information directly pertaining to the break-in of the Democratic National Headquarters has been collected.

For a more in-depth investigation, users also have access to photos, video footage, audio clips, newspaper and magazine articles, tape transcripts, trial transcripts, important legislation influenced

by Nixon, personal memos and letters, essays, biographies, and other materials relevant to Nixon's political career and personal life. The interactive timeline and the detailed chronologies of Nixon's political involvement with Cuba, the Soviet Union, China, and Vietnam also provide organized methods of following Nixon's activities. If that's not enough information, the CD-ROM includes software for connecting to America Online, where users can check out the online sites dedicated to the study of Nixon.

Finally, this product provides Oliver Stone's interpretation of the circumstances that led to Nixon's downfall. Read the complete script from Stone's film "Nixon" or listen to personal interviews with Stone; John Deane; Robert Scheer, correspondent to the *Los Angeles Times* during the Nixon presidency; and Helen Thomas, UPI White House Correspondent and Dean of the White House Press Corps during the Nixon presidency as they discuss the film.

After reviewing the materials contained in *Nixon: The CD-ROM*, you'll be talking, too. The CD-ROM retails for less than \$40.

For More Information:

Nixon: The CD-ROM
Graphix Zone
(800) 828-3838
(714) 833-3838 ■

Playing God In The Afterlife

Nearly 700 years after Dante wrote "The Divine Comedy," LucasArts has released *Afterlife*, the technologically correct way of devising rewards and punishments for the saved and the damned. Unlike other popular simulation programs—or "SIMs"—that are firmly grounded in reality, the planning, developing, and managing of *Afterlife* takes place amidst clouds and flames.

The premise of the game is simple. When the Ethically Mature Biological Organisms (EMBOs) who inhabit the Planet kick the proverbial bucket, their souls pass into the afterlife: hell for some, heaven for others. Your primary duty as a regional spiritual director is to divide your realms of heaven and hell into Fate zones so that the EMBOs' souls stay content or miserable, whichever fits their current situations. Be creative in creating and maintaining your Fate zones. The joy and torture of millions of souls depend on them!

Of course, you have other responsibilities as well. All of the urban planning techniques used in other SIMs apply here; they just take on a metaphysical twist. For example, you should lay out an efficient street plan in heaven

because the holy souls like to mingle with each other; in hell, on the other hand, you need to twist, wind, and snarl the street plan in order to add to the misery. You also need to build educational centers to train the angels and demons that will mete out the just desserts.

Your two guides will offer advice and help you keep track of the graphs, maps, and other tools that provide constant updates on the state of your worlds. Make the right decisions, and the Powers That Be will occasionally reward you for your good work; lose control, and you'll be left alone to face the Four Horsemen of the Apocalypse.

This CD-ROM, which sells for \$55, demands vigilant attention and careful planning. As a result, the games require greater involvement and can last much longer than many other gaming experiences. But perhaps that's to be expected. After all, heaven and hell should last for eternity.

For More Information:

Afterlife
LucasArts
(800) 985-8227
(415) 472-3400 ■



A successful *Afterlife* is as easy as building one soul at a time.

Goopy Fun

Watch it wiggle, see it jiggle. No, we're not talking about a popular food product. This is MetaTool's *Kai's Power Goo*, the real-time, liquid-imaging application that lets you twist and distort the faces of the people you love the most. A tug here, a swirl there, and a few conspicuously placed bulges will turn the most glamorous for a circus sideshow.

The allure of Goo begins with faces. A bank of more than 200 of them, including 176 humans and 16 animals, provides the most basic materials. But the real fun begins when you bring your own pictures to Goo's playground. Use a scanner to save your favorite photographs on your hard drive, ask your local film developer to put your photos on CD-ROM, or use a digital camera to take pictures of your family and friends and then download the photos to your PC. But it really doesn't matter how you get the photographs into your computer; once you have them there, they become fair game for a little rear-Goo-nization.

The combination of 18 buttons and 2 adjustment levers in the Goo Room provides plenty of manipulation options. Twirl, rotate, stretch, and squeeze each head into the perfect—or should we say imperfect—shape. Spike, smear, smudge, nudge, and smooth the image for a peculiar

twist. Make the eyes shrink, the forehead bulge, the ears grow, and the nose move. And when you have contorted the face just the way you like, er, want it, then save it to disk or print it. You also can save each adjusted face as a single frame on a film strip. After you've filled a number of frames, Goo will morph the frames together into a continuous movie.

But your devilish designs aren't restricted to just one face. Visit the Fusion Room, where the old look young and the young look old, the men look like women and the women look like men. The Fusion Room lets you merge two faces into a single visage. By trading facial features and smoothing out the wrinkles, you even can prove that your boss really does have a lot in common with hairy primates.

Kai's Power Goo is a true novelty in a software market full of rehashed ideas. At a street price of less than \$50, the only complaint most people will have is that it won't run on their computers: The intense use of graphics demands a Pentium processor and 16MB of RAM.

For More Information:

Kai's Power Goo
MetaTools Inc.
(800) 472-9025
(805) 566-6200
<http://www.metatools.com> ■

The Fusion Room lets you prove that your boss *does* look like a monkey.



Ring Around The World Of Art



Auguste Rodin's passionate work, "The Kiss," is just one of the many pieces on display in *RINGS*.

Love may receive all of the credit for making the world go 'round, but Calliope's most recent CD-ROM demonstrates that love is also one of the many emotions that goes 'round the world. Based on the Atlanta art exhibition of the same name, *RINGS: Five Passions in World Art* uses an Olympian theme to explore the emotions that unite all people.

The program's introduction, presented by J. Carter Brown, director emeritus of the National Gallery of Art, first explains the symbolic importance of the *RINGS* exhibition. The exhibition points out that art, like the Olympic games, brings people together. Despite our many cultural differences, we all share feelings of love, awe, anguish, joy, and triumph. To emphasize these ties that bind us, the 126 works of art featured on this program are categorized according to these five passions.

The attraction of *RINGS*, however, isn't the introduction, but the art. A narrative and an essay, both written by art experts, provide valuable historical information about each sculpture and painting. A virtual magnifying glass lets users examine more

closely the minute details of the pieces. A brief exposé describes when each work was completed, the life span of the artist, the material from which the work was crafted, the size of the piece, and the current location of the piece. A map of the continents reveals where in the world the piece originated. While exploring, the user is treated to a fine mix of music from around the globe. And finally, before exiting, the user may peruse a small collection of poetry that pertains to each of the five passions explored.

The interactive nature of *RINGS* allows its users—especially any newcomers to the art scene—to easily navigate the fine collection at their own pace and enjoy the stately ambience created by the application. *RINGS* is available for less than \$50 at various retail outlets, or prospective buyers can call Maxis for a direct telephone order.

For More Information:

RINGS: Five Passions in World Art
Calliope Media
(800) 336-2947
(510) 933-5630
<http://www.calliope.com> ■

Take A Break From Computer Aches

Although computers have drastically improved workplace productivity, computer-related repetitive strain injuries (RSIs) have threatened the health of millions of workers. Causing problems from eyestrain and headaches to carpal tunnel syndrome and swollen feet, RSIs sock U.S. businesses for more than \$20 billion each year in health care expenses and account for 56% of all worker's compensation claims, according to the National Institute of Occupational Safety and Health.

Fortunately, most RSIs are preventable. Ergonomic office furniture and computer accessories, including glare guards, wrist rests, and adjustable desk chairs, have eliminated many potential health risks. *Take A Break!*, a new software application from Virginia-based RichTech Inc., combats the remaining risks by teaching computer users how to use acupressure to alleviate minor aches and pains. Acupressure, a noninvasive form of acupuncture, employs fingertip pressure, massage, and meditation to transcend pain and relieve symptoms before serious physical damage occurs.

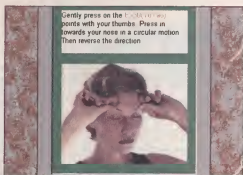
Take A Break! first asks the user to devise a break schedule and choose the physical pains to be treated. After accepting the settings and preparing the application for use, it will operate in the computer's background until break time rolls around, at which time it opens and informs the user that it's time for an acupressure break. Full-color illustrations and short descriptions of each technique appear on the screen and guide the user through the acupressure exercises. For users who have never before

experienced acupressure, the hard-copy version of the manual contains full-body illustrations outlining the location of the pressure points. An online tutorial points out in more detail the primary acupressure points and meridians and also offers an explanation of symptoms and the ways to treat these ailments using acupressure. Background music and voice

RichTech's *Take A Break!* uses ancient Chinese secrets to rub away eyestrain and other aches.

instructions may accompany the acupressure techniques if desired, as well.

Take A Break! is available directly from RichTech Inc. for \$29.95.



For More Information:

Take A Break!
RichTech Inc.
(804) 364-0478
<http://www.infini.net/~richtech> ■

You Might Find This In Your Stocking

Top-selling entertainment and education software as of July 1996

Title	Manufacturer	Avg. Price
Civilization 2	MicroProse	\$45
Command & Conquer	Virgin	\$45
Duke Nukem 3D	Formgen	\$41
Final Doom	GT Interactive	\$42
Jumpstart First Grade	Knowledge Adventure	\$32
Math Blaster: In Search Of Spot	Davidson	\$35
Mavis Beacon Teaches Typing	Mindscape	\$33
MechWarrior II	Activision	\$45
Myst	Broderbund	\$44
Pocahontas Animated Storybook	Disney	\$32
Toy Story Animated Storybook	Disney	\$35
Warcraft II: Tides Of Darkness	Davidson	\$40

Source: PC Data

The PC industry loves the Christmas season. Software companies work overtime to make new eye-catching software titles. Their efforts have already paid off: id Software received more than 1 million orders for the *Quake* adventure game before its release.

In addition to some of this year's previous best-sellers, here are some of the new titles that software producers hope you find in your stocking this year. ■

Projected top-selling entertainment and education software for Christmas 1996

Title	Manufacturer	Est. Price
Amazing Learning Games With Rayman	Ubisoft	\$40
Animated StoryBook, The Hunchback Of Notre Dame	Disney	\$35-40
Award Winning Collection 5 ft. 10 PAK	Sirius	\$25
Diablo	Blizzard Entertainment	\$50
Encarta 97 Encyclopedia	Microsoft	\$55
Family Tree Maker, Deluxe Edition 2	Broderbund	n/a
Fisher Price Ready For Pre-School	Davidson	\$50
Mega Math Blaster	Davidson	\$45
MovieCDs (assorted titles)	Sirius	\$10-25
Picture It!	Microsoft	\$80
Quake	id Software	\$10 and \$60
Toy Story Activity Center	Disney	\$35-40

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Limited Edition OCR software for scanning pages of text, Ulead's ImagePals 2 Go and PhotoImpact SE image editing software for Windows, or MicroFrontier's Color It! image-editing and paint software for Macintosh.

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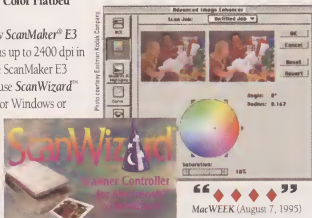
With its 30-bit depth and 4800 dpi maximum resolution the ScanMaker E6 renders images with increased detail in highlights and shadows. The ScanMaker E6 includes ScanWizard, OCR and image-editing software for Windows or Macintosh. And both the ScanMaker E3 and E6 work with Windows 95.

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MacWEEK (August 7, 1995)

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3000	General Business Credit
3503, 3903F	Moving Expenses
4130	Credit for Federal Tax Paid on Fuels
4130	Social Security Tax on Tips
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1990	Tax for Children Under Age 14
1990	Credit for Prior Year Minimum Tax
1914	Election to Report Child's Int. & Div.
1915	Ext. of Int. from Derivative Securities
6234	Change of Address
6234	Like-Kind Exchanges
6234	Business Use of Your Home
1410	Installment Agreement Request
1440-B	Estimated Tax Worksheet
1099-R	Distributions from Retirement Plans
1099-INT	Interest Income Statement
1099-DIV	Dividend Income Statement
W-2	Wage & Tax Statement
W-3G	Gambling Winnings
W-4	Personal Allowances Worksheet
8CHEDULES	
Sch. A	Itemized Deductions
Sch. B, Sch. 1	Interest & Dividend Income
Sch. C, C-EZ	Profit or (Loss) from Business
Sch. D	Capital Gains & Losses
Sch. E	Supplemental Income & Loss

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990, 990-A	Corporation Income Tax Return
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4280	Receipts of Investment Credit
4280	Alternative Minimum Tax
4814	Casualties & Thefts
4717	Sale of Business Property
5471	Inf. of US Persons Resp. For Corp.
5471	Inf. of Non-US Persons Resp. For Corp.
6768	Request for Inc. Research Activities
7804	Appl. for Auto. Extension to File
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Using The DOS TYPE Command

At a time when many computer experts preach that DOS is a useless operating system now that we have Windows, computer users continue to find ways to put DOS commands to solid use. This is especially true with DOS' TYPE command. Whether you run a DOS menu or use Windows, the TYPE command remains the fastest way to read a text file. This command doesn't need special switches and doesn't have lots of confusing options like other DOS commands do. Once you use the TYPE command, you can forget about loading bulky text editors and word processors to read the tiny information files you find on program diskettes.

The TYPE command puts the contents of a text file on the screen so you can read it. TYPE, unlike word processing programs, won't let you make any changes to the file as you read it. When you use this command, DOS merely prints a copy of the file to the screen. You'll see only the white letters and numbers on a black screen; there are no fancy fonts and colors. Regardless of how the text appeared on the screen in whatever program wrote the information, the TYPE command sends the contents to your monitor line-by-line until the entire file scrolls by. When you simply need to read information in a file, the DOS TYPE command is a great, free bonus.

To use this command, enter the following at the C> prompt:

```
type [drive:][path]file name
```

The word "type" tells DOS to run the routine that prints the text message on the screen. Be sure to place one space after the command word. Do not use the brackets shown in the syntax line above but do include the colon. Also, be sure not to add any spaces other than the one shown. The parameters [drive] and [path] stand

for the location of the file you want to read. For instance, if you wanted to read the file called Readme.txt in the \DATA subdirectory on a diskette in the A: drive, here's how you would do it:

```
type a:\data\readme.txt
```

Remember to press the ENTER key. Notice the two backslashes? The first one names the subdirectory. The second one identifies the file name.

■ **Handling A Screenful.** When you press the ENTER key, the file scrolls across your computer screen. If the file is no more than 60 lines long, the entire text file will fit on the monitor. But if the file is larger, you'll see only the final section that remains on-screen after the first part of the text file scrolled off the screen. To view large text files with the TYPE command, combine it with the IMORE parameter. This tells DOS to scroll only enough lines to fill the screen and stop. When you use IMORE to read a large file, DOS places "—more—" on the last line of the screen to remind you that the text continues. Press any key to see

the next screen-sized segment of the text file.

The command for viewing a large text file looks like this:

```
type a:\data\readme.txt | more
```

Make sure you precede MORE with the pipe symbol on the keyboard. The symbol looks like either a vertical line or an elongated colon. Most keyboards place this pipe symbol at the right end of the first or second row of keys on the same key as the backslash (\). To issue the pipe symbol, use the SHIFT key when you press the Backslash key.

To cancel the TYPE IMORE command before you get to the last screenful of information, press CTRL-C. This key combination issues a BREAK command to DOS.

You can use the TYPE command on practically every type of file. But it will only work with text. Text files usually end in .TXT, but they can have almost any ending or extension. Some people use .ASC to designate text files. The three letters are short for the American Standard Code for Information Interchange (ASCII, pronounced "ask-key"), the abbreviation for an early technical standard for computer languages. Some programmers alter the Readme.txt designation to Read.me or Readme.dat.

Just remember that files can contain mostly text and have a variety of file extensions in their names. For example, the two control files that start your computer are text files, but you wouldn't know that by looking at their names: Autoexec.bat and Config.sys. The first is a batch file, which contains instructions for what the computer should do when it starts. The second file is a system file, which also contains words telling DOS what device drivers and memory options to use when it starts. A file ending with .BAK is a backup file. You can use the DOS TYPE command to read all of these text files quickly and easily without running any special word processors. ■

by Jack M. Germain

Finding Missing Files In DOS



You don't have to be Sherlock Holmes to find misplaced files on your PC. You won't even need Windows or special software; DOS has a few built-in tricks that can make anyone a super sleuth.

One way to find files is to use the MS-DOS Shell. The Shell, which is included in MS-DOS versions from 4.0 to 6.0, is a graphical interface that's a bit like a simple version of Windows. To start it, type `dosshell` at the `C>` prompt.

Inside MS-DOS Shell, activate the File menu by holding the ALT key and pressing F. (You also can use your mouse to navigate the menus.) Using the Up and Down arrow keys, position the cursor on Search. Then press ENTER. When the Search File dialog box appears as a small window on your screen, type the name of the file you're searching for. If you can't remember the exact name of the file, type the part of it you can remember and replace the rest with an asterisk (*). You'll have to remember at least part of the name; even Sherlock Holmes needed clues.

Press ENTER to choose OK and start searching, or hit the ESC key if you choose to cancel. A Search Results window displays all

the files that matched your search and the directories containing each file. When you're done with the search results, press ESC. If your search comes up empty, try again, searching for a different word or part of a word that might be in the name of your file. To exit MS-DOS Shell, open the File menu and choose Exit by typing X.

■ **FINDING Files.** Some people don't want to take the time to start the Shell. With a small amount of preparation, they can find files directly from the DOS prompt with the FIND command. Unfortunately, FIND doesn't search your hard drive for file names; it searches a specified file for specific words within the file. This aspect of the FIND command may seem to make it worthless for finding files; if you don't know where the file is or what it is called, you can't specify a file to search.

Fortunately, FIND can be used as a filter command, which is like an add-on to a main DOS command. When you use one, you're telling DOS to execute the main command but then pass the result through another command, the filter. This sorts information to separate out valuable parts. To make FIND a filter, tack `l find` at the end of the main command. The `|` is called a pipe symbol and indicates that you are "piping" information through a filter. It is usually made by holding down the SHIFT key and pressing the `\`, or Backslash, key.

Before you use the pipe key in a command, Microsoft recommends a minor adjustment to

your Autoexec.bat file. When you pipe something through a filter, DOS creates a temporary file (a TEMP file) containing the results of the piped command. Your computer needs to know where to store this TEMP file. Back up your Autoexec.bat file and open up the original by typing `edit autoexec.bat`. Look for a "Set Temp" line that looks something like this:

```
Set Temp=C:\TEMPDIR\tempfile
```

If it is there, leave your Autoexec.bat file alone. If not, use the cursor keys to place the cursor at the bottom of the file and add the line. It should be written like the line above, where TEMPDIR is a subdirectory on your hard drive. To save Autoexec.bat and exit, press ALT-F to activate the pull-down File menu, then X for Exit. When asked if you would like to save changes to your Autoexec.bat, answer yes. Restart your machine.

The clever command/filter combination that lets you search your entire hard drive for a file is this:

```
dir c:\ /s /b | find "WORD"
```

where WORD is replaced with the word you're actually looking for, typed in all caps.

The DIR command normally displays a list of all the files in the current directory. The `/S` tells the DIR command to also display all the files in the subdirectories. The `/B` tells DIR to display the files and directories each on a separate line and to ignore the directory information or "heading" that the command normally displays. Finally, the DIR command is piped through the filter command, FIND, which instructs the computer to only display the results of the DIR command containing what you are looking for, or the WORD. The `|` FIND command filters out the file names that don't contain the word you're looking for and displays only those that do.

A DIR command returns all information in uppercase format. FIND is case-sensitive, so that's why you must type the letters you want to search for in uppercase.

While the FIND command requires more preparation and knowledge than the Shell, you may use it to start your search faster and in fewer steps. Whichever method you choose, you can solve cases of missing files. It's elementary! ■

by Shaene M. Steinauer

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Customizing File Manager

If you use Windows 3.11 File Manager, you might be green with envy for the toolbars available in Windows for Workgroups 3.11 or Windows 95. But with the right customized File Manager setup, you can transplant and weed out files without once wishing for a toolbar.

File Manager's window usually opens up with pull-down menus above a secondary window. If you don't see the secondary window, create one by choosing New from the Window menu. The title bar of the secondary window contains the name of the disk drive you're examining, designated by a letter. For example, C: stands for your hard drive, while your main diskette drive is A:, and the CD-ROM drive is usually D:.

To preserve your customization, open the Options menu and make sure a check mark appears beside Save Settings On Exit. If there is no check mark, click the option to turn it on. Also, look at Status Bar in the Options menu. When it's on, the status bar in the bottom of the window displays how much disk space is free and how many files are in a directory. This helps you compare two similar directories, decide when to delete old files, or ensure there is enough room on a disk to back up a document.

Improving The View. Your drive window is usually split into two sections. The left section displays directories (areas where you store files) and is called the tree. Each folder branches out from a disk drive like branches of an upside-down tree. The right side of the window is called the directory. It displays all the items in a single directory of the tree, including subdirectories (smaller branches) or files.

The tree concept is important when customizing File Manager. Under the View

menu, you may choose to see the split-view Tree and Directory or just the tree or the directory. For example, if you often work within one directory, choose the Directory Only view to move other branches out of your way. The Split command lets you move the window divider to suit your needs. If you tend to keep many

directories with few documents in each, make the tree side bigger than the directory side, so you can see your branches.

The View menu also lets you choose to see All File Details or the less-cluttered Partial File Details. Notice the handy Sort By options. You may list files alphabetically or numerically by name, date created, size, and other details. The date and size options can help you determine which version of a file is most current.

When copying or moving files among disks or directories, it helps to display more than one disk drive window at a time. In the

Window menu, choose New Window. Another window opens inside File Manager. It displays the same tree and directory as your previous window, but you can change the directory by either double-clicking a folder icon (representing a directory) or by clicking once on a disk drive icon, located beneath the window title bar. Set up File Manager to display the drives that you view the most. The same drives will automatically show up when you restart File Manager unless one of them is a diskette drive and there is no disk in the drive. This isn't a problem; File Manager will ignore the empty drive, but when you exit, your settings will be saved to continue ignoring the drive. To prevent this, shut off Save Settings On Exit in the Options menu.

Room For A View. There are many ways to create room for your new File Manager design. First, maximize the File Manager window by clicking the upward-pointing arrow in the upper-right corner of the window. Next, minimize any drive windows you will only use occasionally by clicking the downward arrow in that window. To see the window again, double-click its icon.

The Window menu's Cascade option arranges drive windows one on top of the other and staggers them. It lets you switch among many windows by clicking the part of each window showing. Tile sets the windows side-by-side, so you can see more of each window than in a cascade.

Tile is ideal for copying files.

The Tree menu helps create room for items you want to see.

Choose Indicate

Expandable Branches,

which marks folders in the tree section that contain subfolders (branches) with a plus sign. With this indicator, you may not need to choose Expand All branches, which is sometimes useful but could clutter up your tree with branches you don't need. Double-click the branches you need or select them and choose Expand Branch. If you always need to see at least one level of branches, pick Expand One Level. You may also Collapse Branch.

Even without fancy tools, once you've set your File Manager to your tastes, you'll find cleaning your computer gets a lot simpler. ■

by Shaene M. Steinauer



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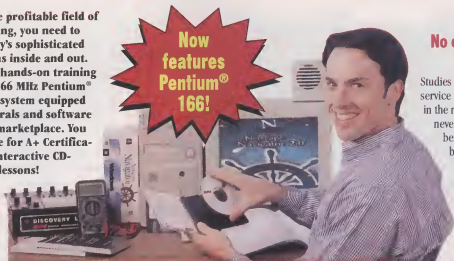
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Creating File Associations In Windows 3.x



There are two ways to work in any Windows application. The first is to start the program and use the File menu's Open command to load the data file you want to work with. This applies to word processing documents, spreadsheets, databases, or any other information you work with regularly.

The second way is to use File Manager to locate the data file you want to work with and double-click it. If Windows knows what application created that data file, it will automatically launch the application and then load the data file you requested into it, ready to begin work. How did it know to do this? The answer is that when you installed the program, it joined the association.

Associations are really simple things. They tell Windows that files with a particular kind of name belong to a particular kind of program. This information is stored in a three-character file name extension. Different file types are assigned different extensions, and Windows tracks which extensions are associated with which programs. When you install a new program on your computer, you also install its new associations so you can continue to launch applications just by picking data files.

You've already seen some associations. The most common example is the .TXT extension, which is associated with the Windows Notepad. If you're browsing in File Manager and come across the file *Mystuff.txt*, just double-click it to see its contents. Because the .TXT extension is registered with Windows for the Notepad, Windows automatically launches Notepad and carries *Mystuff.txt* into it to be viewed.

There are lots of other common associations. Files with the .DOC extension belong to *Microsoft Word*, .XLS and .XLW files belong to *Microsoft Excel* (many applications have more than one association), .CDR files are *CorelDRAW!*'s property, and so on.

Windows stores these associations in the *Win.ini* file in your WINDOWS directory. There's a section called [extensions] that lays it all out in lines that are easy to understand. Here's an example:

```
[extensions]
Crd=Cardfile.exe ^,crd
Txt=Notepad.exe ^,txt
Doc=C:\WINWORD\Winword.exe ^,doc
```

Every association gets a three-character name first, then the equals sign (=) and the name of the program you're creating the association for. If the program isn't in the WINDOWS directory, the association needs the complete path to find the program, like our "winword" example above. After that, you put a carat sign (^), a period, and the three-letter extension that you wish to associate.

■ **Associate Freely.** You aren't locked into using the file name conventions that programs expect upon installation. For example, if you want your word processing files to have your initials as the extension, they can. To launch the word processing program when you select that file, all you have to do is add an association to *Win.ini*'s [extensions] section. There are even two easy ways to do it!

There is one important consideration before you change associations, however. Even though Windows will know about your new extension externally and you'll be able to launch programs and data files from File Manager directly, the program itself won't know about your changes. Most Windows programs only show you files that match their default file type when you use the File, Open dialog box in the program. If your files have a different extension, they'll be invisible until you change the List Files Of Type option to say All Files (*.*). They show up only if you ask for them specifically.

Windows lacks one association it really needs; we'll use that to show you how to create an association yourself. Virtually every Windows program has its own startup, or initialization, file, called an .INI file. These files are composed of text, and occasionally you'll need to modify an .INI file yourself, so why not set up an association to bring .INI files into Notepad?

First start File Manager, then find any file that ends in .INI anywhere on the hard drive. It doesn't matter which file or where it is. Highlight the file name, but don't select it by double-clicking or pressing ENTER.

Open the File menu and select Associate. You'll see a dialog box with two items and some buttons. The first item, Files With Extension, should already be filled in with .INI. The second item is a box listing all the programs known to be installed in your Windows environment. (None) should be highlighted. You'll need to move down the list until you highlight Text File (notepad.exe), then click OK. (If Text File (notepad.exe) is already highlighted, then some kindly program has already created the association for you. You can simply click OK or Cancel.) That's it! You've created an association.

You also can create an association by using Notepad to open *Win.ini* and typing the association right into the [extensions] section. The entry for our .INI file example would be

```
Ini=Notepad.exe ^,ini
```

One nice thing about associations is that they're active as soon as you create them and save, regardless of whether you've used File Manager or Notepad. You don't have to shut down and restart Windows as you do with so many other changes to the environment. You can immediately associate with whomever you choose. ■

by Jeff Shapiro

Adding Notes To Windows 95 Help Files

One of the biggest complaints about help files in Windows 3.1 and earlier versions was that the files that came with programs were fixed in place. The software publisher had to use a special program to create the files, and once they were created, users had to use the same special program to modify them.

When Microsoft introduced Windows 95 it corrected a portion of the problem. You still need a special program to make Win95 help files, but the Help Viewer lets you make comments of your own and incorporate them alongside the publisher's as a sort of electronic "sticky note".

Why would you put your own "sticky notes" inside someone else's help file? First among several good reasons is that adding notes in your own words can be a lot better than trying to make sense out of someone else's unclear instructions. Help files have gotten a lot better over the past few years. In the early days, the same people who wrote the programs also wrote the help files. These folks were known for their skills in programming, not communication. Though today's help files are probably written by a professional writer, they still can be dense.

By adding your own explanation of how to do something, you can make life easier for yourself and for other people who use the same program on your computer (or network, if the program resides on a shared computer).

Another great reason to annotate help files yourself is that the standard files tell you how

to do something, but not why to do it. You can use help file annotation to store procedural information as well as your own experience-based "tips and tricks".

■ **Offering Your Insight.** So how do you add notes to a help file in Win95? It's a snap. All you need to do is launch the application and select Help from its main menu or left-click the ? button if the program has one. If you want to add notes to Win95 Help, left-click the Start button and then select Help.

Once you've gotten to the point in the help file that you want to annotate, left-click the Options button or right-click, then select Annotate. A dialog box like the one shown to the right will appear. It lets you enter anything you think is relevant. Once you're done, left-click the Save button, and your notes will be

Record your own words of wisdom in Windows 95 help files by making personal notes.

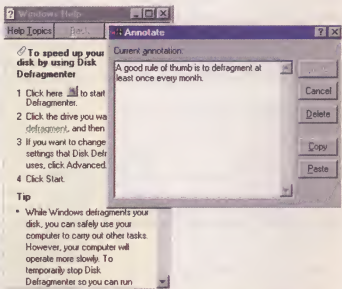
immortalized. (The Save button is unavailable in our photo because we're simply viewing previously written notes.) How do you know when you've stored an annotation for a particular help item? If there's a comment stored, a little paper clip appears next to the top-most item on the screen. To see or change the comment, you can either left-click the paper clip or the Options button and then select Annotate again.

Unfortunately, this leads us to a major limitation of Windows Help. The Help viewer is very powerful and includes the ability to index, search, and even ask plain-English questions that will point you to the right answers. Every bit of information in the help file is indexed and cross-referenced—except for your annotations. There's no way to find an annotation after you've created it other than to go to the screen that you annotated and left-click the paper clip.

You can't print your help annotations directly either, but there's a way around this. The Annotate dialog box has buttons for Copy and Paste. If you want to print your notes, select Copy, then start Notepad and select Paste from the Edit menu. Your notes will be pasted into the document, and you can then print them.

The limitations we've mentioned notwithstanding, the ability to annotate Help information is a powerful addition to the Win95 bag of tricks. It's particularly helpful in installations on networks so that more than one person can share the pearls of wisdom that you've added to the program's already strong Help feature. ■

by Jeff Shapiro



Going Online With OS/2 Warp

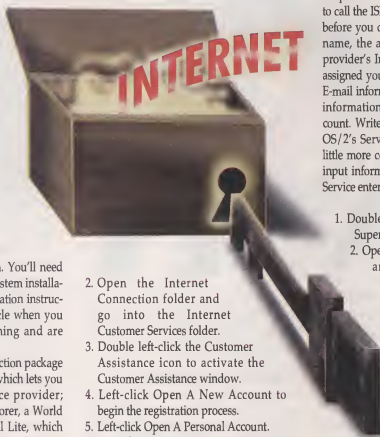
All the tools necessary to jump online using OS/2 Warp come packaged with the operating system—but they may not be on your PC yet. Installation of the Internet tools is optional, and even just a few years ago, many users passed on installing them because the Internet didn't have its current allure. So you may have to go back and add the Internet Connection to your system. If there's no IBM Information Superhighway icon on your desktop, you probably left the Internet Connection out of the initial OS/2 Warp installation. You'll need to pop in the original operating system installation CD-ROMs. Follow the installation instructions and come back to this article when you have the software up and running and are ready to set up an account.

The OS/2 Warp Internet Connection package includes the IBM Internet Dialer, which lets you access the Internet via a service provider; Gopher, a search utility; WebExplorer, a World Wide Web browser; and UltraMail Lite, which enables E-mail exchange.

To open an Internet account using your Internet Connection, you'll need a few things sitting in front of you: 10.5 megabytes (MB) of free hard drive space, a modem (9600 bits per second or faster), and a valid credit card. (You can set up the billing system as an automatic transfer from your checking account, but the credit card method is faster and simpler.)

Using IBM's 'Net Service. The software in your Internet Connection package was designed for use with the IBM Internet Connection Service, but you can use the tools provided by any Internet service provider (ISP). The biggest benefit to using the Internet Connection Service is ease of setup. OS/2 will get you up on the Web and walk you through the connection process step-by-step.

1. Double left-click the IBM Information Superhighway folder to open it.



2. Open the Internet Connection folder and go into the Internet Customer Services folder.
3. Double left-click the Customer Assistance icon to activate the Customer Assistance window.
4. Left-click Open A New Account to begin the registration process.
5. Left-click Open A Personal Account.
6. Read the IBM Service Internet Service Terms and Conditions agreement. Reading this document now will cut down on confusion later. Even if you've used Internet access companies before, you should read each service's rules. Left-click OK when you understand.
7. Fill in your biographical information in the blanks provided. You might want to take the information right from your most recent credit card bill. The Internet Connection Service uses the credit card company's information to verify your entries, and they're a little particular about discrepancies. For example, if your name is Joe R. Schmoe on your credit card bill, the Internet Service will reject Joe Schmoe.
8. Fill in modem configuration information. The default information already in the boxes should be correct. If you try to connect and it doesn't work, this is one of the first places to check for problems. Check

your hardware manual and/or IBM Internet Connection Service Help utility for configuration information.

Using An ISP. Finding a local service provider takes a little outside research. Check in the phone book and talk to PC users. You'll have to call the ISP and get the following information before you can go online: the specific provider name, the access phone number, the service provider's Internet address (IP), the IP they've assigned you, your user ID and password, and E-mail information. Be sure to ask for all of this information when negotiating your new account. Write it down and have it at your side. OS/2's Service Provider installation can be a little more confusing because it requires you to input information that the Internet Connection Service enters automatically.

1. Double left-click the IBM Information Superhighway to open the folder.
2. Open the Internet Connection folder and go into Internet Utilities folder. Double left-click the Dial Other Internet Providers button.
3. Left-click the Add Provider button.
4. Fill in the blanks with the information provided to you by your service provider. Left-click the Next button and continue to fill in the blanks until you reach the end. This installation process asks for four pages of information. The third page has no required information, but it contains the E-mail account information. The fourth page is the modem information page, and the default settings should be fine.
5. Left-click OK.

You should have to set up a connection only once. After that, connecting to the Internet is just a matter of left-clicking the Dial button in the IBM Internet Dialer found in the Internet Connection folder. If you have trouble, double-check the information you typed in. Typos are killers, especially for the ISP connection. Also, though it sounds obvious, make sure the modem is plugged in and turned on. If all else fails, call your service provider for help. ■

by Elizabeth Panska

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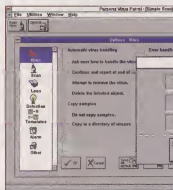
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Basic Training

Regardless of the operating system you choose, there are a few elementary functions you should understand. This monthly section is your one-stop guide to learning these crucial first steps in DOS, OS/2 Warp, Windows 3.1, and Windows 95. Use it to learn your operating system and see whether others offer a smarter way to work.



VIRUS PROTECTION

A virus is an intentionally destructive program that infects computer files. Viruses can do just about anything, from displaying harmless but annoying messages on your screen to destroying your files. Fortunately, you can protect your computer against these infections with antivirus software.

MS-DOS 6.22

MS-DOS versions 6.0 and newer include MS Anti-Virus (MSAV). This program scans your PC's memory and drives for viruses and can remove some of them from your system. To run MSAV, type

msav

at the DOS prompt and press ENTER. A dialog box opens. If the Work Drive in the lower-right corner doesn't indicate the drive you want to check, use the arrow keys to highlight Select New Drive and press ENTER. Use the arrow keys again to choose the drive you want from the icons in the upper-left corner of your screen and press ENTER.

To change how MSAV operates, use the arrow keys to highlight Options and press ENTER. In the Options Setting dialog box, select the options you want. The default settings are Verify Integrity, Create New Checksums, Prompt While Detect, and Check All Files. Other options include Create Backup, Disable Alarm Sound, and Create Report. Make any changes you want by using the arrow keys to highlight a choice and then pressing ENTER to add or remove the check for that option. Choose OK to close the dialog box.

Now choose either Detect or Detect & Clean. If you go with Detect & Clean, MSAV will remove those viruses it can. If you just choose Detect, MSAV will offer you the option to clean, continue without cleaning, or stop scanning each time it finds a virus.

When the drive has been checked, a report will appear, telling how many disks and files were checked, how many were infected, and how many were cleaned. Choose OK to close the dialog box after you've read the report. To exit MSAV, arrow down to Exit and press ENTER.

You also can place the MSAV command in your Auto-exec.bat file (by adding a line at the end reading **msav**) so that MSAV runs every time you boot your computer. (For more information on editing system files such as Auto-exec.bat and Config.sys, see "Basic Training" in the May 1996 issue of PC Novice.)

DOS 6.0 and newer also include VSAFE, which operates as a terminate-and-stay-resident program (TSR), meaning it stays active in the background while you run other programs. VSAFE constantly monitors your system for any viral activity, such as reformatting the hard drive. It blocks suspicious activity, warns you, and lets you choose what to do next. To load VSAFE, type

vsafe

at the DOS prompt and press ENTER. DOS will show you how much memory VSAFE is using and tell you that ALT-V is the hotkey combination used to access a list of VSAFE's options. That combination opens the VSAFE Warning Options, which is a list of eight options that lets you determine what you want VSAFE to monitor.

The defaults are HD Low-Level Format, Check Executable Files, Boot Sector Viruses, and Protect HD Boot Sector. HD Low-Level Format means VSAFE will warn you of attempts to perform a low-level format on your hard drive. (A low-level format is a physical format, in which the data is destroyed.) When VSAFE Checks Executable Files, it scans for viruses in each executable file that's loaded. If checking for Boot Sector Viruses, VSAFE will scan for viruses in the boot sector of each diskette you insert. Protect HD Boot Sector means VSAFE warns you if a program attempts to write to a hard drive boot sector. To change an item, press its number. Press ESC to exit when you're done.

You also can insert a VSAFE command in your Auto-exec.bat file to start it every time you boot, by adding a line reading **vsafe**.

OS/2 Warp Connect

OS/2 includes no virus detection utility. To protect your computer from viruses, you'll need to purchase an antivirus program such as *Central Point Anti-Virus* (contact Symantec at 800/441-7234, 541/334-6054) or *IBM AntiVirus/2* (800/311-4447, 512/434-1554).

Windows 3.1

Windows has its own version of MSAV, called Microsoft Windows Anti-Virus (MWAV). This program is installed during DOS Setup as part of DOS, but it can be run from Windows. Open the Applications program group and double-click MWAV. The Options menu contains all of the options in MSAV described above, with the exception of Create Report. It adds Wipe Deleted Files to the list. The default settings are

the same as those in MSAV. To change the settings, click the check box for that option. When you've set the options you want and closed that window, click the drive you want to scan, then click either Detect or Detect & Clean. These options function just as they do for MSAV.

To run MWAV every time you start Windows, place MWAV in the StartUp group by dragging its icon there.

VSAFE also can be run with Windows. Load it in DOS as described above before starting Windows. When you start Windows, open the Applications group and double-click MWAVTSR. That opens the VSafe Manager, which lets you change the options by clicking Options. The same eight options exist as in DOS. Click a check box to change the status of an item. You also can add MWAVTSR to the StartUp group.

■ Windows 95

Windows 95 has no built-in antivirus program. Some of the popular antivirus packages for Win95 include Dr. Solomon's Anti-Virus Toolkit (800/701-9648, 617/273-7400) and McAfee's VirusScan for Windows 95 (408/988-3832).

If you have DOS on your system in addition to Win95, you can run MSAV from DOS.

RECOVER DELETED FILES AND DIRECTORIES



Occasionally, you may accidentally delete something you meant to keep. When that happens, you may be able to recover the lost file or directory.

■ MS-DOS 6.22

MS-DOS includes the UNDELETE utility. To recover a file if it hasn't been overwritten (type **undelete /l** to see which files can be undeleted), all you have to do is type

undelete

and press ENTER. Undelete will list files available to be recovered one at a time; choose Y or N for each file.

There are two levels of protection that do more than the standard Undelete. The highest level, Delete Sentry, moves deleted files to a hidden directory, where they remain until that directory fills up, at which point the oldest deleted files are purged from it to make room for newly deleted files. So long as a file is still hidden here, you will be able to undelete it.

The middle level is Delete Tracking. This system keeps a list of the clusters in a deleted file but doesn't protect the clusters themselves. If the file hasn't been overwritten, you can recover files that have been protected this way.

To change the level of protection, unload the memory-resident portion of Undelete by typing

undelete /u

and pressing ENTER. To establish the new level, type

undelete /t

for Delete Tracking, or

undelete /s

for Delete Sentry, and press ENTER.

■ OS/2 Warp Connect

OS/2 includes the UNDELETE command, which may let you recover deleted or erased objects. In order for the command to work, though, you must have enabled the DELDIR environment variable prior to deleting the object you want to recover. To do this, remove the REM statement from the beginning of the DELDIR statement in your Config.sys file. (See "Basic Training" in the May 1996 issue for details.) After you remove the REM statement, shut down your system and restart it.

If you don't find the DELDIR statement in the Config.sys file, you can add it yourself by placing a line reading

set deldir = drive:\path, maxsize

where the drive is the one from which you want to be able to recover files after deletion, the path is the path to the directory where you want deleted files temporarily stored, and the maxsize is the size (in KB) that you want allotted to this temporary storage. (As you exceed that size, the first files you deleted will be removed to make room for later deletions and become unrecoverable.)

If you want to be able to recover items deleted in DOS sessions, perform the above procedure on the Autoexec.bat file as well as Config.sys.

If the DELDIR variable was enabled before the item was deleted, you can recover the item. Open OS/2 System and then Command Prompts. Open a DOS or OS/2 window, type

undelete /l

and press ENTER to see a list of file names of recently deleted items. Write down the complete path and file name of the item you want to recover, including the drive letter and directory name (i.e., C:\OS2\Myfile.txt). Next, type **undelete** followed by the path. For example, for the file C:\OS2\Myfile.txt, you would type

undelete c:\os2\myfile.txt

and press ENTER.

■ Windows 3.1

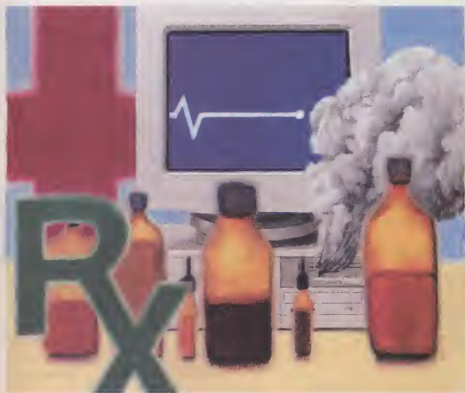
To recover deleted files in Windows, double-click MWUNDEL in the Applications group in Program Manager. Click Drive/Dir to change the drive or directory you're checking for the deleted file; a list of deleted files will appear. To undelete a file on the list, click the file to highlight it and click the Undelete button.

■ Windows 95

If you delete a file in Win95, it goes to the Recycle Bin. Until you empty the Recycle Bin, you can retrieve files from it. To recover a file, double left-click the Recycle Bin, select the file you want to recover, and choose restore from the File menu. The file will return to its original location. (Files deleted at the command prompt or from a diskette aren't sent to the Recycle Bin and can't be recovered.) ■

by Diana K. McLean

First Aid Utilities Can Fix Your Ailing PC



In the computing world, crashes can be deadly—at least to vital information. At stake are the data and time lost when your computer suffers an accident. Often, the difference between quickly getting your computer working properly and a long, costly recuperation via technical support is the job done by first aid utilities. The right first aid package running in your computer's background memory can put life back into your ailing computer before it crashes so you can keep working.

To the uninitiated, first aid utilities can seem like voodoo medicine. But they really aren't magical. This specialty software is designed to analyze your computer's components and report its findings. At the very minimum, the software suggests actions you can take to improve the computer's sluggish performance or remove the cause of conflict that makes your computer crash. More sophisticated programs compare the results of system analysis to a huge database of cause-and-effect conditions. They then cross-reference thousands of performance problems caused by errors in .INI (initialization) and configuration files.

Many of the problems that bring down computers are rooted in software that breaks the rules Microsoft laid down when it designed Windows 3.1. Given the great variety of computer components and programs that share computer memory, it's no wonder we have to work so hard to keep everything working without conflicts. Granted, Windows 95 brings vast improvements over Windows 3.1 to the way programs get along with hardware. But Win95 must work with an even larger span of 16-bit and 32-bit programs. It crashes a lot less often, but misbehaving programs and uncooperative hardware don't make it immune from problems.

That's where first aid utilities come to the rescue. These programs create a safety net between the operating system and the hardware and software it runs by watching for memory clashes and improper program actions that can crash the system. They spot incompatibilities with software settings and hardware device drivers that coordinate the mouse, printer, modem, video, and audio systems. As great as these programs sound, however, first aid utilities don't always live up to the promises they make about crash protection and error fixing.

Plus, they take up some of your computer's memory to work quietly in the background, and they require large chunks of your hard drive's storage space.

First aid utilities aren't all the same either. Some excel in analyzing hardware and software performance and do little else. Others are good at diagnosing the possible causes of recurring problems. A few add preventative maintenance features that help avoid serious breakdowns. To show you what's on the market, we reviewed the following leading first aid utilities: CyberMedia's *First Aid 95 Deluxe*, Symantec's *Norton Utilities*, TouchStone's *WINCheckIt* and *CheckIt Diagnostic Kit*, and Quarterdeck's *WinProbe*. Each offers a variety of solutions to today's computing woes, so you can find the one that fits your troubleshooting needs.

■ **First Aid 95 Deluxe.** CyberMedia's product takes monitoring and diagnosis a step further than most fix-it software. After identifying the cause of a problem, First Aid 95 Deluxe attempts to resolve it by tapping into its own supply of replacement drivers and .DLL files, adjusting bad parameter settings, and tweaking Registration entries. This step can be a big help if you're relatively inexperienced in working with computer hardware and software.

Another feature that gives First Aid a leg up on the competition is its ability to stay current. As new software joins the market and CyberMedia develops better fixes, users can download updated files from the Internet. First Aid automatically installs and upgrades itself, maintaining a "living product" of upgrades and bug fixes. First Aid takes you directly to the World Wide Web sites of application and hardware vendors for support, updates, and their latest drivers.

Go Spot Go Mobile Dog Wash
Steve Jordan, Chief Dog Washer

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- schedule follow-up appt. for dog bite
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- e-mail fan letter to Eddie the Frasier
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(pictured here, "Rufus")

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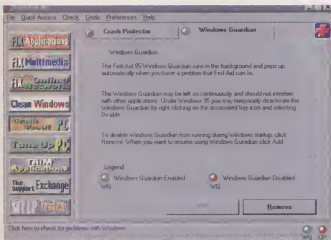
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General Magic

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Windows Guardian, located in CyberMedia's First Aid 95 Deluxe, detects and fixes hundreds of common system problems.

Three First Aid modules run in memory to protect your system while you work. The first, Crash Protector, guards against older, balky programs that can conflict with other programs and the Windows (both 3.1 and 95) environments. Crash Protector reads the signs of impending crashes that these programs cause, giving you time to save your work before the offending programs stop responding.

The second module, Windows Guardian, detects and diagnoses startup problems in all 16-bit Windows programs, which are designed for Windows 3.1. Windows Guardian then checks with the CyberMedia Knowledge Base to detect and fix hundreds of common problems as they occur.

The third, RetroFix Monitor, tracks changes made to configuration files by software you add to your system. (The computer uses these files to start and run Windows correctly.) It takes a snapshot of these critical files when you shut down Windows. Later, if the changed configuration causes problems with how your system runs, you can use RetroFix to restore an entire snapshot or an individual file from a snapshot.

When a problem strikes, corrective action may be just a mouse-click away with AutoFix. And if that doesn't work, help may be a second mouse-click away with ManualFix. Browse through a list of problems to find one that closely resembles the malfunction you're having. Then click AutoFix, and it will make an educated guess as to what the problem is. It searches the hard drive for missing files that the nonworking task needs. Then it checks its own database for the matching drivers or support files and copies them to the appropriate spot on the hard drive.

Sometimes there's no match, and other times the guess is wrong. That's where ManualFix comes in. First Aid looks for missing files only on your local hard drive, not diskette drives or network drives, when you run AutoFix. ManualFix lets you select the drive to search so you can restore the needed files from backup diskettes or the original installation diskettes. There is little risk in trying the AutoFix and ManualFix options.

If they don't solve the problem or they cause other difficulties, just go to the Fixes menu and click Undo.

First Aid follows the ancient philosophy of an ounce of prevention being worth a pound of cure. It does this by making small problems easy to fix before they become major ones. The ounce of prevention is the Clean Windows feature, which checks a wide range of system components to make sure harmony reigns inside. Included in this system analysis are:

- a check of your computer's display, mouse, and keyboard;
- a review of your font setup;
- a check of Windows Program Manager (in Windows 3.1) and Windows Explorer (in Win95);
- a confirmation that Object Linking and Embedding is set up correctly;
- a check of .INI files and the Win95 Registry (a database of system settings) for invalid entries.

An unusual feature that can be priceless for those with a crowded hard drive is the Trim Applications option. This is more of a convenience item than a rescue function. It compresses and stores selected features of an installed program or even an entire application. This frees up valuable storage space on your hard drive because compressed programs take up less room. Normally,

Windows doesn't let you arbitrarily remove parts of programs you don't use often. In most cases, manually removing an application doesn't remove all the file associations that were created during its installation, and doing this yourself can cripple your computer. Trim Applications determines which features of a supported application can be disabled to free up hard drive space. You can't run the trimmed parts of an application in their compressed form, but after an application is trimmed, Trim Applications can restore all of the trimmed features or just the features you want to use.

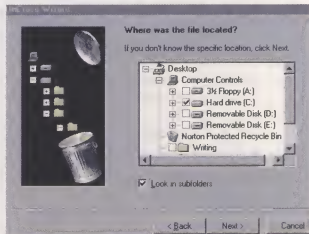
First Aid may be the biggest help to those who add new hardware to their systems, especially systems running Windows 3.1. The software fixes hardware configurations and repairs mismatched driver and setup problems associated with new hardware.

In many cases, First Aid is able to repair the faults it finds. In a best-case scenario, this product will get your computer running smoothly after a system crash or hardware conflict. In a worst-case scenario, it will help you narrow down the causes of the malfunction and point you in the direction for solving it.

First Aid 95 Deluxe
\$59.95

CyberMedia
(800) 721-7824
(310) 581-4700
<http://www.cybermedia.com>

■ **Norton Utilities 95.** This package goes back to the early days of DOS as being THE original, definitive first aid utility, and it

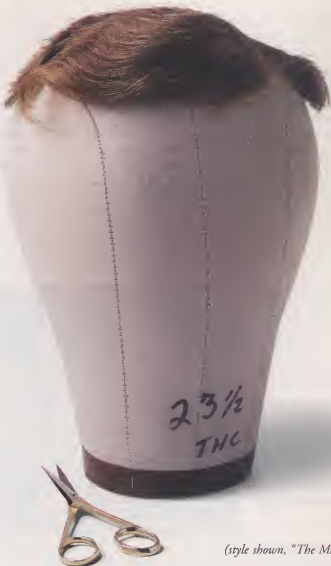


Norton Utilities contains the UnErase Wizard, which retrieves deleted files from diskette and removable cartridge drives.

Top It Off Toupees
Vince Puccinelli, Head Honcho

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- schedule consultation w/Ron P.
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(style shown, "The Matador")

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has kept pace with the growth of operating systems into Win95. Although it offers features not found in the competition, Norton Utilities 95 lacks a common menu interface from which all its components can be selected. Instead, each utility runs from its own icon. Taken as a whole, though, this suite of programs does everything the other diagnostic programs do—only it does it better. The suite includes these key features:

- a tune-up for systems before Win95 is installed;
- System Doctor, a system self-tune program that runs in the background and launches the needed utilities to solve a problem when detected;
- Space Wizard, which frees up storage space by removing unnecessary and duplicate files;
- Disk Doctor, which diagnoses and repairs disk drives;
- Speed Disk, which controls disk fragmentation and improves overall system performance;
- System Information, which provides detailed system analysis;
- Image, which backs up vital file system data structures for better system repairs.

There are two other features that help make Norton Utilities your overall best bet. One is the UnErase Wizard. Norton is the only product on the market that unerases files deleted from diskette drives and removable cartridges running under Win95. (Win95's Recycle Bin only stores files deleted from hard drives.)

The other important feature is the Rescue Disk Set. Several other products create emergency startup diskettes to back up the essential files your system needs to recover from a crash. Only Norton Utilities includes two ready-made Emergency Rescue Disks that will restart and repair your system even when Win95 won't load. These diskettes include DOS versions of Norton Utilities so you can restart your computer in DOS, analyze the problem, and fix it.

The Windows/DOS version 8.0 has similar features tailored to Windows 3.1 users. It also has special support for 32-Bit File Access for Windows for Workgroups 3.11 users.

Norton Utilities 95

\$129

Symantec Corp.

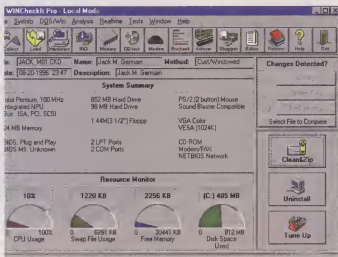
(800) 441-7234

(408) 253-9600

<http://www.symantec.com>

■ WINCheckIt & CheckIt Diagnostic Kit

WINCheckIt 4.0 doesn't directly repair hardware and software problems, but it's one of the best detective tools for analyzing a system's performance and troubleshooting problems. Designed in a 16-bit version for Windows 3.1 and a 32-bit version for Win95, it is the most comprehensive program in this category. WINCheckIt lets users troubleshoot PC



The system analysis features in WINCheckIt Pro, by TouchStone Software, extend beyond one screen and have to be scrolled into view.

problems, analyze system performance, manage disk space, and detect setup conflicts quickly and easily.

WINCheckIt also comes in a professional version, WINCheckIt Pro, that includes even more advanced testing. A companion program, CheckIt Diagnostic Kit, includes WINCheckIt Pro, a set of self-booting DOS diagnostic diskettes, a special plug for testing purposes, two screwdrivers, and a four-volume set of reference books on CD-ROM.

WINCheckIt utilities, which emphasize maintenance more than repair, include an uninstaller program to remove Windows applications or archive them for future use. A comprehensive modem diagnostic utility determines the modem's capabilities, speed, and configuration and tests its line connection. The Change Monitor feature detects and records

changes in a system's hardware configuration, system files, and performance. Also included is a top-notch CD-ROM diagnostic utility to help avoid compatibility problems. It not only checks the CD-ROM itself but also determines CD-ROM drive capabilities and rates MPC (the Multimedia PC standard) level 1, 2, or 3 compatibility.

The Clean & Zip Utility rounds out the suite of diagnostic and monitoring tools. A built-in file compression manager makes it easy to weed out wasteful programs that hoard valuable storage space. The Tune Up feature optimizes Windows memory to increase the largest memory block available.

As well-rated as WINCheckIt Pro is in analyzing system components and resolving conflicts, it slipped up on two relatively simple tasks in our trial run. First, it failed to detect SyQuest's new EZFlyer removable cartridge hard drive that was installed on a second parallel printer card. Although WINCheckIt Pro detected a second printer port as LPT2, it ignored the existence of anything attached to this port.

Second, it misread another external storage device attached to parallel printer port LPT1. WINCheckIt Pro listed an Iomega Zip Drive as a second hard drive when in fact, it is a removable cartridge disk drive. It did, however, correctly report the storage capacity as 100MB. By comparison, Win95's built-in diagnostics correctly labeled both of these devices by manufacturer and type.

WINCheckIt

CheckIt Diagnostic Kit

\$50 (WINCheckIt)

\$129.95 (CheckIt Diagnostic Kit)

TouchStone Software Corp.

(714) 969-7746

<http://www.checkit.com>

■ **WinProbe.** This is a hardware diagnostic and systems analysis program for Windows 3.1 and Win95. WinProbe aids you in optimizing your system configuration and helps prevent crashes and fatal errors. It also peeks into the hard drive as an early warning system to keep your storage device properly maintained. One of its strongest assets for Win95

users is the ability to clean up and edit the Win95 Registry.

Eight tool icons provide easy access to all of the program's features. A few of these features are available with tools Microsoft builds into both of its Windows operating systems, but WinProbe makes them easy to use by providing the information in easily understood parcels. For instance, the System Information module reports on your system's hardware and software in details that far exceed what is available in Microsoft Diagnostics in DOS 6.0. Win95 users can dig through My Computer menus to check on system elements, but if the computer is operating improperly, these built-in reports won't do the inexperienced user much good. WinProbe provides an exhaustive set of tests that analyze dozens of system components.

Here's what you get from WinProbe:

- WinProbe's System Information includes data on the CD-ROM, drive types and partitions, cache memory, disk utilization, I/O ports, ROMs (access speed, access time, operating speed, data transfer rate, etc.), keyboard, and video.
- Diagnostics runs more than 200 tests on your hardware to track down the fault when a problem occurs. A stress-test mode is a good way to find the cause of an intermittent problem. Other handy tools are the automatic memory and system resource optimizers. This tool lets you set the time interval to clear out wasted memory holds left over from programs you aren't still running. This is a big help in Windows 3.1. Although Win95 does a much better job of freeing up memory traps, it isn't flawless. With more memory resources available, you can open more applications and keep your system from crashing.
- Recovery creates a full set of backups for all critical system files. If a new program changes key system settings that later interfere with the computer's performance, it's easy to return to the earlier configuration. This kind of backup should be second nature, especially when new programs are installed. WinProbe makes

sure these essential system control files are available when you need them. Of course, you have to tell WinProbe to make the backup files by clicking the Recovery icon.

- CrashShield runs in the background to come to your rescue when something unexpected happens. When a program does something the operating system can't handle, you have a safety net that gives you time to save your work before the system has to be rebooted.
- The Registry Guru is the closest thing you can get to having a foolproof Registry editor. Make a wrong move in the Registry file, and Win95 may never run again. That's why the Guru only gives you access to the parts of the Registry that you need to edit, remove, or add new entries. You can work in plain English without worrying about syntax and folder locations. If you work with the Registry Guru enough, you will be able to make changes to fine-tune the operating system safely.
- The Tune Up module lets you adjust the computer's performance in four areas: loading, registry, interface, and processes. This is a painless way to get more performance from your software and hardware.
- Knowledge Base is a Windows tutor and technical guide combined in one easy-to-read, on-screen manual. Type in a topic and read what the experts have to say about that subject area. The information spans computer components, Win95 tips, and upgrade techniques.

- The Settings module lets you control how much you want WinProbe to do. Use it to set the level of backups for Registry and .INI files and update those intervals.

WinProbe goes a long way to helping you understand what is happening when your computer isn't working properly. It outshines Win95's built-in modules at the job of analyzing computer components and critical support areas. But it is most useful as a tool for improving system configuration. New PC users will appreciate WinProbe's hand-holding, and when trouble strikes, you can use the data WinProbe provides to solve the problem yourself.

WinProbe

\$59.95

Quarterdeck Corp.

(800) 223-9508

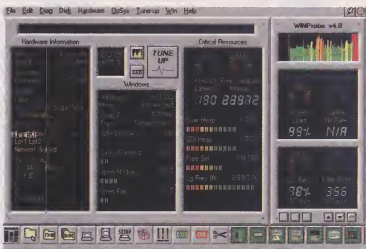
(310) 309-4250

<http://www.qdeck.com/>

One final note about first aid utilities. The best of these programs have features that spring into action when your system is about to crash. They warn you to save your open files before a lockup occurs. They also warn you of problems that develop and give you the option of automatically trying to fix the problems. But you should remember that these products aren't infallible, and they can't fix every problem you may encounter.

Are first aid utilities worth buying? Are you better off using them than taking chances? In a word, "yes" to both questions. Without first aid software, a problem that develops with your PC can mean you spend days fiddling with hit-and-miss solutions. Even worse, you can spend hours on the phone working with technical support people to track down the cause of your troubles. If you had a technical manual that listed all the known problems that other users reported with their software and hardware combinations, you could solve many of these problems yourself. That's what first aid utilities can do for you. ■

by Jack M. Germain



Quarterdeck's WinProbe can run several tests to check your system's components and has all of its features on an uncluttered menu screen.

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Technological Advances In Technical Support

When computers first appeared in homes, there was little need for technical support. For one thing, these PCs were pretty limited; there weren't as many ways for them to mess up. And these were machines with difficult interfaces: DOS, BASIC, and other unpleasant acronyms. Users had to be well-versed in the guttural language of the computer just to use it. These users could solve most glitches that arose.

But with the advent of the modern computer and its simpler-to-use, but more advanced, peripherals and software (especially the Windows operating system), it doesn't take a technical genius to put a PC to good use. But it still may take a "techie" to understand all the inner workings of this hardware and software and to correct problems that confront the average user.

For years, the main way troubled computer owners could find help was to make a technical support call (sometimes free, sometimes not) and then sit on hold for several minutes or several hours waiting for one of these techies to aid them. But new technologies have opened other support routes. Using everything from fax machines to the World Wide Web, companies have provided alternatives to a long wait listening to Muzak.

These technological advances in technical support are often free—from humans as well as cost. And they often provide favorable results. But are these methods any less

frustrating than listening to an automated voice saying, "Your call is important to us. Please continue to hold."

■ **Just The Fax, Ma'am.** Receiving a facsimile of a document that offers a step-by-step solution to your problem can be one of the best ways of getting support. The call to order this document is usually free, and the fax often will arrive in just a few minutes. Unfortunately, it may be difficult to determine which fax document you need for your specific problem. Or the document you get may contain information too general to be of use.

Durant Imboden, a manager of The Microsoft Network's writing forum, says the faxback service has already had its day.

"Faxback was a great innovation several years ago, but today it seems almost quaint," says Imboden, who has used the most current tech support options. "I dislike having to order a 10-page catalog just to learn what documents are available. And I haven't the patience to watch my fingers tap-dance on a Touch-Tone pad while a robot's voice tells me, 'You may now order . . . TWO . . . more documents.'"

To try out faxback for ourselves, we called Hewlett-Packard's toll-free number for the service (800/333-1917). We called at 10 a.m. on a Monday. The first time, the phone rang numerous times and then hung up on us. The second and the third time, the line was busy. We finally made it in on the fourth try, where an automated voice informed us that



unfortunately, we weren't going to speak to anyone live.

We decided to get a catalog of available documents for our HP PC. We forged through a hierarchy of menus and selected the appropriate option. We entered our fax number, exited, and sat back to wait for our fax to come. It took us about five minutes to order the document catalog the first time, but subsequent orders were much faster since we were familiar with document numbers. The fax took only about five minutes to arrive, but we then had to repeat the process to get back in, where we could order up to five documents per session.

Our documents were informative, but they weren't the best for troubleshooting. The material was closer to what you would find in a user's manual than in a problem-solving guide. We got very generalized troubleshooting tips rather than solutions to specific problems.

Faxback is a useful service, but only if you're not in a dire hurry for support, are able to receive faxes, and have a problem generic enough to be answered by nonspecific documents.

■ **Totally Automatic.** In a similar vein lies the automated telephone support. The ultimate in voice mail, this service lets callers dial in and then move through a hierarchical menu until they arrive at a message that explains how to solve their specific problem. "Automated support is great for routine problems," Imboden says, "because there's seldom any wait, and help is available 24 hours a day."

Also, the number for automated support is usually toll-free. But just because you can dial in for free at 2 a.m. doesn't mean you'll necessarily find what you need—or even be able to use it. "Most of us can't scribble at the speed of a recorded voice message—that is, if we have the patience to navigate our way to a relevant message in the first place," Imboden says.

To sample the help from an automated friend, we called the number for support with Microsoft's personal operating systems (800/936-4200). We called at 11 a.m. on a weekday and got in with no problem. We were offered several operating systems to choose from, and we selected Windows 95. Before we were even given a menu, the recorded voice explained how to solve a problem with Winsock (a built-in communications program)

"For high-tech support, there's nothing better than an online forum." — Durant Imboden, The Microsoft Network

that occurs when upgraded from Windows 3.x to Win95. It must have been troubling a lot of people.

We got the option of having a map of the automated support faxed to us before we leapt into the various menus. It sounded handy, so we entered our fax number. Microsoft's faxback service has a neat option to personalize your fax in case you're at the office and don't want someone else to run off with it. You can enter your extension or employee number and even your name, so they will appear on the fax when it arrives.

Entering the number is nothing innovative; you just punch it in. But entering a name is pretty impressive. For each letter, you punch the numeric key the letter appears on and then press 1, 2, or 3, depending on whether the letter is first, second, or third on that key. For example, to enter the letter *N*, you first press 6 and then 2 because *N* is in the middle of the 6 key. As long as your name doesn't have too many Qs or Zs, you're set. Unfortunately, after we went through all this trouble to enter our name, the fax arrived without a name or extension number.

But the fax of our map did show up in less than 10 minutes and was a useful navigational tool (see figure on following page). We used it to find our way to Microsoft's answers to frequently asked technical support questions. Their answers were very general and were rattled off much too fast to jot down, but we did have the option of receiving a copy of the solutions via fax or regular mail.

Automated telephone support would be beneficial to users with the same nonspecific problems that could be helped by faxback.

Automated support is a little faster and a little easier to navigate than faxback menus, but it is harder to use the information once you've found your solution.

■ **Internet Support.** Most companies have embraced the Internet in their quest to provide automatic means of technical support. The users we talked to agreed that it is the fastest and easiest way to aid yourself with technical difficulties. There are numerous ways to facilitate electronic communication online, and most of them are good ways to find help.

"For high-tech tech support, there's nothing better than an online forum," Imboden says. "This should include Web pages, newsgroups, or bulletin boards run by a technical representative, libraries of drivers and patches, and a real-time chat room." Online services such as America Online and CompuServe will have variations of all these items in their support forums.

Using the Internet on your own can be a more independent and resourceful way of finding solutions, says Brian Johler, a computer consultant at DRT Systems in Leawood, Kan. "My preferred way (of technical support) is looking up stuff on the Internet, on different Web pages. It seems to be easiest to maneuver around and get what you need. With some of the automated answering services and faxbacks, it seems you get a lot of other junk, or you have to weave through a lot of stuff to get what you wanted some answers on."

Web slingers. Almost every company, from the largest corporation to the smallest home business, has a Web page. Some are fancy, some practical, others both; they're out there, and they can hold just what you need for technical support. Most pages will hold all the general information you would find in an automated phone support or faxback service and more in the form of FAQs. These frequently asked questions (and their answers) can be easily navigated by finding a question that you may have and then following a hyperlink, a Web connection to another page or page segment, to the answer.

Perhaps the best usage of support Web pages and FTP sites (file-transfer protocol is a way of transferring files over the Internet) is to house downloadable files, such as device driver updates, networking files, and other support programs.

The device drivers, software that lets peripherals communicate with computers, that



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came with our Creative Labs multimedia package (which includes a CD-ROM drive and sound card) weren't working, so we turned to the Web. We found a Web page that showed an index of Creative Labs' FTP site <http://www.ctsg.crea.com/wwwnew/tech/ftp/ftp-cd.html> and were able to download the latest version of the drivers for our operating system.

Many technical Web pages also contain other useful materials. These can include online manuals, troubleshooting documents, and technical information sheets for specific systems.

This information can be interesting, but we're still looking at the same problem of finding information that is too general to be helpful. Ryan Yokoyama, a college student in Daly City, Calif., has tried finding answers to problems that arise with his Gateway 2000 Minidesktop by using Gateway's tech support Web page. "Usually Web pages are a good resource, but due to their variety of products, they are quite general in their FAQ support," Yokoyama says. "For example, they offer tips on CD-ROMs, hard drives, and Windows 95 in general, but not very often relating to one specific system."

Yokoyama had a little better luck on the US Robotics Web site (<http://www.usr.com>). "They have their whole database of FAQs, faxback documents, and E-mail documents on their Web page. These are a very good resource. They apply all their modems to almost all games and applications that you can think of."

So what do you do if you have a more specific problem? You've tried sifting through lists and lists of faxback documents, listening to a myriad of phone support messages, even ployed through all the links on a company's Web page and still haven't found the answer to your question. If you have a more difficult situation than those addressed by these automated support tactics, you may have to turn to a real human being, at least indirectly. But it can still be done, for a small price or even for free.

E-mail back. E-mail back is similar to faxback. You send a message requesting certain documents, and the company's server, or computer that provides information, will

automatically spit them back to you. But some companies offer a variation of this service that lets you make specific queries about technical issues. By using your electronic mail account, you can send a message to a tech support person, who will be able to ascertain the information you need and then reply to your message. Unfortunately, the time you wait for this reply can range from a few hours, to several weeks, to never.

Darcy Otto of Oakville, Ontario, has used Dell Computer Corp.'s E-mail support on sev-

possible. It took just over a week for them to reply.

Otto says this about E-mail support: "Just a warning about E-mail: It's too easy to ignore. I have a couple of messages to which I have never received a response."

E-mail can be useful but should probably be used along with other support methods.

Bulletin board systems. The oldest form of online support is the BBS, or bulletin board system. It really is an electronic version of a bulletin board. Users can post messages that can be read and responded to by other users. The good news about BBSes is that you don't need Internet access to use one. All you need is a modem, and you can direct dial into a BBS using Terminal in Windows 3.x or HyperTerminal in Win95. The bad news about BBSes is that they are almost always toll calls.

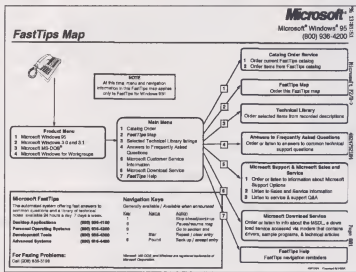
We dialed into IBM's BBS (919/517-0001) and wandered around a bit. It was pretty easy to post and retrieve messages, but we had to register and configure our message retrieval parameters first (so we didn't automatically attempt to retrieve every message on the BBS, something IBM says

would take hours). This took several minutes at our expense, but it was better than waiting as long or longer on hold.

BBSes are a viable alternative to calling live support. Accessing one usually takes a lot less time than calling a live number, and real solutions to real problems can be found without much effort.

Newsgrps. One of the best ways to solve a problem is to ask someone who already has. Newsgrps are read and contributed to by people who have common interests. If you can find someone who has gone through the same agony you have, they're probably willing to tell you their resolution.

Yokoyama says newsgrps are his ideal source for technical support. "You receive honest and experienced answers. There is a difference between a technician telling you what is wrong from deductive reasoning and a computer user telling you the solution from experience," he says. "Also, you receive warnings about certain products from customers, while the technician would try to help



This phone support map from Microsoft shows that dialing a tech support number is just the first step toward finding information.

eral occasions. "Each time I have asked Dell a question, they get back to me in a couple of days. Although they were very thorough in their response, it took too long. I now use Dell E-mail for information rather than technical problems."

Yokoyama had even worse luck with Gateway 2000's E-mail response time. "E-mail support is a waste of time because they are probably swarmed with customers and do not have the staff to reply at the same rate as it is incoming. I think it takes a week or two to receive a response through E-mail."

We decided to try out E-mail back and test Gateway's rumored sloth-like support. We sent a message to the customer service E-mail address explaining who we were, what we were doing, and asked for any kind of response that would show a human read our message. Within 45 minutes, we received an automatic response that notified us that Gateway had received our message. It promised that a Gateway representative would acknowledge our message as soon as

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you, yet protect the reputation of their company in the process."

We found the newsgroups to be highly useful. When you post a question to a relevant group, several hundred to several thousand people will read your article. Every question we asked received several replies. In fact, we used the newsgroups to find people to interview for this article. We posted to several of the computer newsgroups explaining what kind of users we needed to talk to. We received half a dozen responses in less than a day.

Even if you don't want to wait for someone to reply to your post, the newsgroups can be an excellent resource. A search service called Deja News (<http://www.dejanews.com>) can help you find all the information you're looking for. After entering a keyword or phrase, this Deja News will search through the archives of all the different newsgroups and display for you the relevant posts, when they were posted, which group they were posted to, and the E-mail address of the person who posted the information.

"The newsgroups are very useful and are the best way to get a quick and accurate response from experienced customers," Yokoyama says. "So far, every question I

posted, I received a solution within 48 hours."

IRC. If you would prefer to ask your question directly of one of these experienced users, try out the Internet relay chat (IRC) channels. IRC is real-time communication over the Internet. By using a program called a **client**, you can log in to an IRC server and "talk" to other users around the world. Because your words are seen by others in the conversation almost as fast as you type them, you should be able to find an answer to your question right away.

Unfortunately, it might not be that easy to find the right person to talk to on IRC. But if you're already on, you can ask around. Most people on IRC are nice enough to point you in the right direction.

If you haven't been on IRC before, a good place to start to obtain a client is <http://www.mirc.co.uk/>, and once you're on, it's a good idea to start in the channels designated to help "newbies." Some of these are #newbies, #new2irc, and #ircnewbies.

IRC can be very useful to a more experienced 'Net explorer, but if you're unfamiliar with the unique aspects of this communication forum, it might be beneficial to stick to the more tried and true newsgroups and Web pages.

■ **Live, Automated Support.** As technology increases the power of computers and the Internet, there will be more and more ways for both of them to screw things up, but there will also be many more ways of receiving support for these screwups. One of the more innovative of these involves merging the experience of live support with the latest technological advances. By using remote control software, techies can, with your permission, take hold of your computer through phone lines and perform the diagnostics necessary to find the solution to any problem.

It's easy to imagine a tech support future where the best of all these support methods are smoothly blended together and work as an effective cohesive unit. Automated solutions are quickly given to even the toughest questions, and only the most difficult are forwarded on to a live techie, who swiftly connects to your system, diagnoses, and then fixes your problem.

Until this ideal world replaces the current tech support dystopia, automated methods can help find a solution to technical problems faster and cheaper than live support. At the very least, it gives you something to do instead of waiting on hold. ■

by Joel Strauch

More Ways For More Information

Acer America

Tech Support Fax: (408) 922-2933

BBS: (408) 428-0140

Web: www.acer.com/aac/index.htm

FTP: <ftp://ftp.acer.com>

Newsgroup: <alt.sys.pc-clone.acer>

AOL: Keyword Acer

CompuServe: Go ACER

Tech Support: (800) 445-6495

Compaq Computer Corp.

Tech Support Fax: (713) 514-1743

BBS: (713) 518-1418

Web: www.compaq.com

E-mail: support@compaq.com

Tech Support: (800) 652-6672

Dell Computer Corp.

Tech Support Fax: (512) 728-3589

BBS: (512) 728-528

Web: www.us.dell.com

FTP: <ftp://us.dell.com>

Newsgroup: <alt.sys.pc-clone.dell>

E-mail: support@us.dell.com

AOL: Keyword Dell

CompuServe: Go DELL

Tech Support: (800) 624-9896

Gateway 2000

Tech Support Fax: (604) 473-3600

Web: www.gdt.com

Newsgroup: <alt.sys.pc-clone.gateway2000>

E-mail: info@gdt.com

Tech Support: (604) 299-3379

Hewlett-Packard (HP)

BBS: (208) 344-1691

Web: www.hp.com/workstations

Newsgroup: <comp.sys.hp>

AOL: Keyword HP

CompuServe: Go HP

Tech Support: (208) 323-2551

IBM Corp.

BBS: (919) 517-0001

Web: www.ibm.com

Newsgroup: <comp.sys.ibm.pc.misc>

E-mail: askibm@info.ibm.com

Tech Support: (800) 772-2227

Microsoft Corp.

Tech Support Fax: (800) 727-3351

BBS: (206) 936-6735

Web: www.microsoft.com

Newsgroup: <comp.os.ms-windows.various>

FTP: <ftp://ftp.microsoft.com>

Packard Bell

BBS: (801) 250-1600

Web: www.packardbell.com/gfx/gfxhome.html

FTP: <ftp://packardbell.com/pub>

E-mail: support@packardbell.com

CompuServe: Go PACKARD BELL

Tech Support (800) 733-4411

Does Your PC Have A Mind Of Its Own? Here's How You Can Take Control...

BY CLARK PARKER

If you're like me, you probably look at your computer with equal parts awe and incomprehension.

Sure, the possibilities seem limitless, but it sometimes seems as if just switching your PC on requires advanced education. You can read the operating manual, but more often than not it seems to have been translated from Japanese to English by someone who knows only Swahili.

Go to your local bookstore, and you'll find hundreds of books — all written for somebody else's software. Of course, most computer manufacturers offer telephone helplines as a solution...if you don't mind sitting on hold for forty minutes and then forgetting the question you meant to ask, that is.

International Correspondence Schools of Scranton, Pennsylvania has developed another option. It's called *distance education*, and for thousands of men and women around the world it's become the best way to learn the intricacies of computer hardware and software without having to go to class.

The way distance education works is simple. You enroll in the program that best suits your needs — anything from Desktop Publishing to an Associate in Specialized Business Degree in Applied Computer Science. Once you enroll, the school sends you instructional materials to your home or office. You get lessons, books, software—whatever you need to complete your program. Lessons are presented step by step, and most programs can be completed in less than a year. A Degree takes a little longer, but you can still come away with a four-semester Degree in as little as two years.

What most people like best about distance education is its convenience. Unlike a college class, you have complete control over when, where, and how long you study. There's no time spent traveling to and from class, and your "class schedule" is as flexible as

you are. Plus there's no waiting for other students to catch up or wishing the instructor would slow down. You move at your own pace. Exams are given on an open-book basis, which means you can be sure you've mastered the concepts rather than memorized the answers.

The programs are usually designed to provide students with the expertise to enter or advance in computer careers. In fact, thousands of students have used their training to secure promotions, pay raises, and even start whole new lives in computer career fields from Programming to PC Repair. And even if you just want to master the PC for your own enrichment and enjoyment, you can be confident that each training program provides up-to-date and comprehensive instruction.

All the information is presented so that even students who don't know a floppy disk from a soggy pizza can easily absorb every detail. Beginners love distance education because everything is presented in a logical, step-by-step format. There's no confusing "techno-speak," and you get plenty of hands-on experience. And even though programs are easy to understand and complete, they're so informative that even computer experts will learn something (and usually several somethings) they didn't know before.

But just because you study at home, on your own schedule, doesn't mean you're alone. ICS, for instance, has a large support staff at their headquarters, including expert instructors who are available to answer questions by toll-free helpline, as well as via the ICS site on the world wide web (<http://www.icslearn.com>).

Of course, ICS isn't the only distance education school out there, though it is the largest and most experienced in the world. You should compare ICS with other programs to make sure you get instruction that's right for you. The following chart shows a few of the differences between ICS and its leading competitor:

HOMESCHOOL CHECKLIST	ICS	Leading Competitor
Students Enrolled	250,000	55,000
Total Programs Available	62	30
Number of College Degree Programs	11	None
24-Hour Student Helpline	Yes	No
Payment Plan Available	Yes	Yes
Finance Charges on Payment Plan	None (0%)	8%

ICS currently offers Career Diploma Programs in such computer specialties as: Computer Programming in QuickBASIC, Visual Basic, Visual C++, Personal Computer Specialist, PC Repair, A+ Certification Test Prep*, Desktop Publishing & Design, Computer-Assisted Bookkeeping, Small Business Management, and Personal Computer Fundamentals*. You can also get your High School Diploma through ICS, or choose a Career Diploma program in a non-computer career field, like Electrician, Medical Office Assistant, Dental Assistant, Professional Locksmithing, TV/VCR Repair, Legal Assistant, and Appliance Repair. You can even earn an Associate in Specialized Business Degree by choosing Applied Computer Science, Accounting, or Business Management. Get an Associate in Specialized Technology Degree in Electrical Engineering Technology or Mechanical Engineering Technology. Every ICS Degree Program offers computer training.

* For personal enrichment only

FOR MORE INFORMATION, you can contact ICS directly by calling toll free 1-800-595-5505, Ext. 2070 Write to International Correspondence Schools at Dept. AA5SB6S, 925 Oak Street, Scranton, PA 18515 or contact ICS at <http://www.icslearn.com>

The school will send you FREE information and a color brochure about the training program you're most interested in. There's no obligation, so contact ICS today!

Making Contact:

Reaching Tech Support Is Half The Battle



Technology is great, but some situations call for a human touch. This is especially true when it comes to computer technical support. Nowadays, there are numerous high-tech ways to find answers to technical questions, from visiting Web sites and news-groups to calling automated answering and faxback services. (For more information on these services, see "Technological Advances In Tech Support" in this issue.) These systems are great if you know what questions to ask. But what do you do when you can't even define your problem? You try to reach a human being who can offer a reassuring tone, help you figure out your problem, and then develop a workable solution.

So live technical support is great. At least in theory. However, in the past, trying to get a technician on the phone could be more of a chore than building a new computer from scratch. Calls to technical support lines often meant hours spent on hold, or worse, nothing but a busy signal. There are few things more irritating than to drop several thousand dollars

on a machine, only to hit a brick wall of busy signals the first time you call for help.

Well, it seems most of the major computer manufacturers have learned a thing or two about customer service. We looked at the technical support lines of seven manufacturers and found that most of the time, we made it through to a human being with a minimal wait and very little frustration. Of course, there were some exceptions, but overall these companies are doing a pretty good job.

We should point out that our survey wasn't very scientific. We started on a Monday and made a batch of calls at least once a day through the end of the workweek. All of the companies (except Hewlett-Packard) offer service 24 hours a day, seven days a week, so we threw in a few rounds of night calls and even made one set of calls on Saturday night. We called the companies in the same order every time, and we usually managed to call them all within about an hour and a half.

When we made these calls, we were simply trying to get a live human being on the phone.

We weren't trying to rate the technical support itself; we just wanted to know how long it would take to get through.

In the reviews and chart that follow, we've included the average wait time provided to us by the manufacturers as well as the average wait time compiled from our own calls. You should only use these times as reference points, not guarantees. Technical support service is dynamic, and wait times can fluctuate all over the place, depending upon everything from major sales promotions to the day of the week you call. In fact, the only real guarantee we can offer is that your wait times will vary from ours.

We also should mention that all of the services we called offer free technical support for most hardware issues and some software ones. But be warned: If you don't understand how to run your word processing program and you call your computer manufacturer's support line for help, you're probably going to pay for that help. These centers can't have people tying up their regular service people with simple software operating questions. So make sure when you do get through that you understand what services are free and which ones come at a price.

■ **IBM.** Big Blue knows technical support. IBM impressed us from the start with their PC HelpCenter. After answering a number of queries from the automated system to find out which department we needed, we found ourselves talking to a technician in less than a minute every single time we called.

Not bad for a department that handled more than 300,000 calls in July alone. According to Diana Shumick, manager of consumer marketing and customer satisfaction at the Center, the HelpCenter answered more than 76% of the calls that month within 30 seconds. The Center's goal is to make sure each user reaches a technician within three minutes—a figure the company beat handily in July.

To make sure the HelpCenter always hits its mark, Shumick says it's learned to carefully observe when the volume of calls peaks and dips during the course of the week and then plans the shifts of the 1,000 Center employees around those numbers. Consequently, there isn't really a good or bad time to call the HelpCenter. While Mondays are the Center's busiest day, regardless of whether you call on that day or any other, you should get right through.

And getting right through is what this game is all about. IBM has a strong handle on its technical support, and it ranked at the top of all the companies we called.

■ **Compaq.** The folks at Compaq's technical service center deserve some praise themselves. Like IBM, Compaq had a live technician on the line in less than a minute every time we called. The only thing we didn't like about Compaq's service was the threat of a \$35 fee placed over our heads during the initial automated portion of the call.

It's not so much the fee that bothered us because as we mentioned, most of the manufacturers charge for some of their services. It's the way Compaq throws it out there, telling you the company will charge your credit card if it determines that your problem isn't a freebie. Basically anything that is Compaq's fault—hardware or software defects—is covered for free. But, while the company undoubtedly covers many of the calls it receives, the possibility of a charge probably sends some new users scurrying to hang up the phone.

Aside from that, Compaq's consistently quick response was very impressive. Compaq spokesman Mike Berman says the company's call takers handle about 9,000 calls a day, with an official wait time of less than a minute. Of course, he points out, that time may vary from month to month, day to day.

Compaq's technical service is right up there at the top, in terms of speed, so we placed them in the number two spot, just behind IBM.

■ **Hewlett-Packard.** We had pretty decent luck getting through to this company's technicians, although we were a little put off by the fact that it's a toll call and that we had to call during limited technical support service hours (7 a.m. to 6 p.m. Mountain Time, Monday through Friday).

When we talked to one of the technicians, he told us the company decided against an 800 number to cut down on the amount of people calling with questions that are easily found in the manual. That's fine, and we understand that these types of calls can tie up support people needed more desperately by others. But it seems a little harsh to make the owners of a brand-new Hewlett-Packard PC pay to get a little help when they have trouble getting their new machine to run.

We were unable to get hold of any official statistics from the company on service personnel, average wait times, or call volume. Our

average wait time was just over three minutes a call. That's out of four calls, which is fewer calls than we made to the other companies because we had to leave them out of the evening and weekend calling sessions.

Despite the toll call and the less-than-stellar operating hours, decent wait times landed Hewlett-Packard in the number three spot.

Our next three companies weren't quite in the same league with the first three, but they all did a respectable job. Since they had comparable strengths and weaknesses, we felt all three ranked about even, so we'll call it a three-way tie for fourth place.

■ **Acer.** Acer was all over the board in terms of wait times. For example, on Wednesday morning and Saturday night, we waited less than a minute, but on Wednesday night, we waited for about 35 minutes. Through it all, we listened to some really annoying music, and the company never provided an estimate as to how long our wait might be. But, in Acer's defense, we never once received a busy signal.

Overall, out of our eight calls, Acer had an average wait time of just over 14 minutes. A spokesperson for the company said their numbers show an average wait time of about 14 minutes, so we pretty much followed the norm. The spokesperson also said the company handled about 90,000 calls in July, which adds up to about 3,000 calls a day. There are approximately 500 persons handling those calls all together.

We found Acer's service acceptable, if not extraordinary. We'd really like to see an

automated function that could tell callers how long they can expect to wait.

■ **Dell.** Dell didn't offer the shortest wait times, but the company was up-front about how long the wait was probably going to last. On several occasions, the automated section of our call included an estimated wait time. Most of the time, that guess was pretty accurate. We appreciate that.

Also, on calls made Wednesday night and Saturday night, we received a message that told us all operators were busy and it would be better to simply call back another time. The message is basically the same as a busy signal, but it's a lot less annoying. Of course, if you had a problem you absolutely needed to get fixed right away, it probably wouldn't matter how the message was relayed. We had our best luck with Dell on a Friday morning, when we only waited about four minutes.

According to company officials, the average wait time to reach a technician is five to eight minutes. Our average was significantly higher, with a 14.5-minute average from five calls. (Our other two calls ended with messages.)

Dell's spokesperson couldn't tell us the number of people the company has answering phones, and she also couldn't reveal how many technical support calls Dell handles. So overall, we thought Dell did a pretty good job, although the two "call backs" were a little disappointing.

■ **Gateway 2000.** The people at Gateway 2000 were also hush-hush about their official



statistics, and they weren't talking when it came to the number of support staff, call volume, and wait times. So it was up to us to find out all by ourselves.

We called the company's technical support line seven times total and made it through four times, for an average wait time of about 10.5 minutes a call. While the average time is better than that of both Dell and Acer, we were a little frustrated that we couldn't get through those three times. Gateway also had a polite message that pointed out the technicians were just too busy to help us. Better than a busy signal, but the novelty soon wears off.

John Bishop, director of one of Gateway 2000's three call centers, says the company is working hard on getting everyone through, the first time.

"Our goal is to never have a customer get a busy signal, but I won't say it can't happen," he says. "Especially in the holiday season, when a lot of people are setting up new systems, we simply have a lot of calls."

Our best through-time with Gateway 2000 was on Wednesday night, where we made it in

less than a minute. We received the "call back" messages on Wednesday morning and Thursday and Saturday nights.

■ **Packard Bell.** Speaking of busy signals, those two words pretty much sum up our experience with Packard Bell's technical support line. We called them a total of 28 times, at various times throughout the course of six days, and we never once made it through. We received a busy signal every time. It was maddening.

About halfway through the week, we talked to David McWilliams, a Packard Bell public relations manager. We asked him about the repeated busy signals, and he told us that sometimes a busy signal is better than getting through and waiting on hold for a long time.

"At this particular moment, we feel it is better that someone not waste their time on a long hold," he said. The way the system works now, he says, the people that do get through receive service within a decent amount of time.

We understand the concept, but come on now. Twenty-eight phone calls and still no help?

McWilliams says Packard Bell currently has about 1,300 people answering phones 24 hours a day, seven days a week. In July, they handled 192,082 technical service calls, with an average wait time of less than 21 minutes a call. He says he expects the number of service people to jump to around 1,600 by the end of the year.

We just hope the additional 300 people can help free up a few phones. Frustrated Packard Bell owners would undoubtedly prefer a long wait time to another busy signal.

Overall, we thought the calls went pretty well. IBM and Compaq cleaned up, and Hewlett-Packard also did a fine job. Acer, Dell, and Gateway 2000 all answered in a decent amount of time, with relatively few frustrating moments. Packard Bell was the only company that seemed to drop the ball, and it says more help is on the way. Oh well, six out of seven isn't bad. ■

by Tom Mainelli

The BEST And The Rest

Company	Number	Hours	Official Wait Times*	PC Novice Wait Times**	Notes
IBM	(800) 772-2227	24 hours a day, seven days a week.	Majority of July calls answered within 30 seconds.	Average was less than one minute per call.	Call anytime; they're always ready.
Compaq	(800) 652-6672	24 hours a day, seven days a week.	Average is less than one minute per call.	Average was less than one minute per call.	Excellent system, but we didn't care for the fee threat.
Hewlett-Packard	(970) 635-1000	7 a.m. to 6 p.m. Mountain Time.	NA	Average was just over three minutes per call.	Toll call, so know your question beforehand or be prepared to pay.
Acer	(800) 445-6495	24 hours a day, seven days a week.	July average was about 14 minutes per call.	Average was just about 14 minutes per call.	Always made it through, but you never know how long it's going to take.
Dell	(800) 624-9896	24 hours a day, seven days a week.	Average is five to eight minutes per call.	Average was just over 14 minutes per call.	Offered recorded messages with accurate wait times; we didn't get through twice.
Gateway 2000	(800) 846-2301	24 hours a day, seven days a week.	NA	Average was just over 10 minutes per call.	Also offered accurate wait estimates; we didn't get through three times.
Packard Bell	(800) 733-4411	24 hours a day, seven days a week.	July average was less than 21 minutes per call.	NA	We never made it past a busy signal. That pretty much says it all.

*Official wait times were drawn from information provided by each company.

**PC Novice wait times were compiled from our own phone calls.

NA--Information was Not Available.

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All Aboard The New Bus

USB Technology Promises To Revolutionize PCs



Adding peripherals to a PC has never been easy. Since the dawn of the home computer, users who want to expand their PC's capabilities have had to open their computer cases to install expansion cards; fiddle with interrupt request lines, DIP switches, and driver settings; and make sure their systems' components are properly configured so they all work—and all work at the same time. If an emerging computer technology lives up to its lofty potential, those problems will eventually go the way of the 5.25-inch diskette and slip into computing history.

Some of the PCs shipped this summer came with chipsets, designed by Intel Corp., that supported a new hardware bus standard called the Universal Serial Bus (USB). (A bus is a piece of hardware in your PC that connects your central processing unit [CPU] to your peripherals.)

The effect of USB on computing will be eventual, but dramatic: Plug a peripheral, any peripheral, into a USB port, and it will be automatically configured and ready for use. You don't even need to turn off your computer to install a USB-compatible device.

"USB means you won't ever have to take off the cover of your computer to achieve plug and play," says Mark Kirstein, an analyst for PC Market Services.

■ **USB & You.** The technology behind USB is complex, but the results for consumers are simple. Users will be able to daisy chain up to 127 peripherals to USB ports, eventually eliminating the need for serial and parallel ports

and the need for interrupt request configurations in computers. (Devices are daisy chained by connecting the first device to the computer, the second device to the first device, the third device to the second device, and so on.) You only need to use one USB port, but computers with USB capabilities will have two or more ports for users who want to attach many peripherals to their computer. Basic peripherals such as keyboards and monitors will act as additional plug-in sites. USB can handle bandwidth of 12 megabytes per second (Mbps), which means this bus standard also will be able to accommodate a new generation of peripherals, such as video projects that support the MPEG-2 standard. (Motion Picture Experts Group-2 is the latest version of the video compression standard.)

PC industry giants Compaq, Digital Equipment Corp., IBM, Intel, Microsoft, NEC, and Northern Telecom worked together to create the new bus standard because they realized ease-of-use was the biggest shortcoming of PC technology, says Jim Pappas, director of Peripherals and Interconnect Technology with Intel Architecture Labs. The USB standard is not specific to any platform, but at this time, it can be used only with Windows 95 and Windows NT.

"We recognized that the Mac (Macintosh computer) was easier to use than a PC, and that's why we kicked off this USB project," Pappas says. "The PC industry realized that it could make a dramatic improvement to the PC. It was a big enough problem to make this happen."

Consumers have told the computer industry over the years that their biggest concern when upgrading is opening their computer to add devices or upgrade it, Pappas says. USB technology, he says, is the industry's response to that concern. "End users don't want to spend a couple of thousand (dollars) for a PC and feel they'll break it by opening it," Pappas says.

Some PCs on store shelves already have USB capabilities, Pappas says. They include IBM's PC 300 and Aptiva models, Compaq's Presario, and Siemens' models using the Pentium and Pentium Pro chips. Sony also recently announced it will include USB technology in its line of PCs.

Unlike the current bus standard, Peripheral Component Interconnect (PCI), USB

automatically detects when peripherals are added and removed, eliminating the need for users to configure the devices. As a result, USB peripherals will be plugged in and unplugged as easily as a toaster. Because there will only be one connection to the computer in most cases, the rat's nest of cords beneath and around today's PCs will be eliminated.

■ **Not So Fast.** Although you now can buy a PC with a USB port, it's unlikely you'll be plugging any devices into it anytime soon. Pappas says few existing products are USB-compatible, and that probably won't change until peripheral manufacturers catch up with the technology early next year. More than 50 companies are designing peripherals for USB, he says, and a few USB-compatible products are already on the market (i.e., certain brands of mice, keyboards, modems, monitors, and speakers.) For information about USB-compatible computers and peripherals, visit the Universal Serial Bus site on the World Wide Web at <http://www.teleport.com-usb>.

The gap between USB technology in PCs and products that are USB-compatible will be widespread at first, Kistein says. For that reason, consumers obviously won't be throwing out their peripherals with serial and parallel port connections as soon as USB-compatible printers, scanners, and joysticks hit the marketplace, Kistein says. PC manufacturers will be putting out "hybrid" computers that have traditional serial and parallel ports as well as one or more USB ports until these peripherals with traditional ports become obsolete and USB-compatible peripherals become the standard, he says.

"If you buy a new PC (with USB), it had better have a parallel port because that's what your printer needs," Kistein says. "That means you will have parallel ports on computers for years to come."

This transition from parallel and serial ports, which use the current PCI bus standard, to the USB standard will be similar to how the computer industry and users made the switch from 5.25-inch diskette drives to the 3.5-inch drive standard, Kistein says. At first, computers had both types of drives until 5.25-inch diskettes became obsolete. "You won't see fundamental changes for probably two years," he said.

■ **Applications.** After USB-compatible peripherals become readily available, users will have to obtain an upgrade for their

operating systems to be able to use USB products, Pappas says. Future versions of Win95 and Windows NT will come with software that lets your PC detect USB peripherals, so users won't have to buy new software to make each new peripheral operate.

Eventually, consumer electronics products will have USB ports so they can be connected into PCs, Kistein says. Expect to see USB incorporated into telephones, answering machines, stereo tuners and receivers, digital video discs (DVDs), and other products in which the user controls the interface, he says. "This will link PCs to the intelligence of consumer electronics," he says.

USB technology will especially benefit computer users who have more than one computer, even those who have a desktop and a portable PC. A peripheral can be shared easily among computers simply by unplugging it from one computer and inserting it into another, eliminating the need to buy the same type of peripheral (such as a modem, for example) for each computer the user owns.

USB also will change business computing, Pappas says. It will greatly expand the role of telephony in the workplace because USB

technology was developed with the integration of telephones and computers in mind, he says. Mitel Corp. has demonstrated a USB telephone with call-control features that should be released by the time you read this article. Features of USB telephony products will include on-screen caller identification, a history of when conversations with the caller took place and what the call was about, and the ability to set up conference calls with the touch of a button, Pappas says.

He also foresees that USB will be used to provide an additional level of computer security for businesses. Computers with USB, for example, could be programmed to require that a corporate badge be inserted and then a traditional password be entered before a user can gain access to a computer.

The many ways USB can be used continue to develop as the standard is incorporated into more and more computers and products, but this much is certain: For users who like to add gadgets to their PCs, the Universal Serial Bus appears to be a computing dream come true. ■

by Robert Frnass

Next Bus Stop: *FireWire*

Universal Serial Bus (USB) technology seems pretty amazing and is a godsend to the average PC user who's driven to tears while wading through the uncertain world of peripheral configuration. But the bus that is set to follow USB will eventually bring even more gee-whiz technology to the computing world.

The IEEE 1394 bus standard, called FireWire, is set to bust through USB's bandwidth barriers to let PCs connect with consumer electronics that use digitized video, such as some versions of camcorders, cameras, and digital video disc (DVD) players. It also can be used in desktop publishing and video editing.

The result will be PCs that serve as home entertainment centers in addition to their traditional computing roles, says Mark Kistein, an analyst for PC Market Services. But FireWire, under continued development by Sony (who has already developed an IEEE 1394 camcorder), is not designed to

eventually replace the USB standard the way USB is designed to eventually eliminate the PCI standard. Instead, these buses will share the same road in a PC, Kistein says.

Computers of the future will use USB ports to attach about 90% of the common peripherals you use today, such as modems, printers, and scanners, Kistein says. FireWire connections will be needed, however, for even more bandwidth-hungry features such as digitized video, which will become more prevalent. While USB supports a bandwidth of 12 megabytes per second (MBps), the IEEE 1394 bus is expected to handle between 200MBps and 400MBps, which is needed to process digitized video.

FireWire capabilities will be included in some PCs as early as late this year, but they won't make much of an impact right away, Kistein says, because FireWire-compatible products probably won't be commonplace until 1999. ■

Winter
1996

What You Should Know When Buying A New PC

Computers and cars have something in common (and for once we're not talking about the Information Superhighway). It's the way people buy them. Consumers don't shop for automobiles based solely upon performance and price; extra options and appearance also play a role in the purchasing process. The same increasingly goes for computers. While things such as "horsepower" and storage space are important when you buy a new PC, features such as additional storage drives or colorful, sleek designs may make one system more tempting than another.

Why the emphasis on the extras? About 35% of U.S. households already own a PC, and computer companies are worried that they might be faced with a saturated market. Some market research firms have warned that PC sales will hit a slump in the next year or two. One way computer companies are attempting to attract new customers from the remaining 65% of households is to alter the intimidating beige-box look and create the feeling that the PC is just another must-have home electronics device.

Last year, we saw systems with colorful streamlined designs, funky multimedia monitors, remote controls, and built-in telephone answering systems. This holiday buying season won't be much different. In fact, computer manufacturers are making their PC lines even more distinct and home-oriented. For instance, Acer offers a system with a telephone hanging off the side of the monitor, Gateway 2000 produces a computer that incorporates a big-screen monitor/television, and IBM has

unveiled a system that houses the drives and power switch in a separate box that can be hidden away when not in use.

To help you make your way through all of the new options and acronyms, we've put together a two-part series on buying a PC during this holiday season. No matter how flashy a PC's outside, you still need to be smart about what's inside. So this month, we'll tell you how much PC power you really need and what kind of components to watch for. Next month, we'll take a look at some of the new consumer PCs, outlining what they each have to offer in terms of features and price.

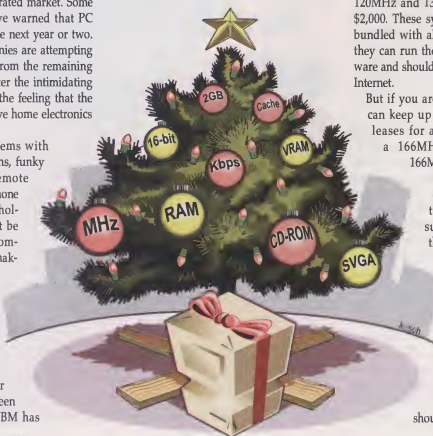
■ **Processing Power.** While the options may differ among PCs, one constant for all

systems is the amount of power your computer should have. The biggest determinants of your computer's performance are the type of processor and its speed. Currently, the **microprocessors** (which are the "brains" that control the processing functions of the computer) in new systems are either Pentium or Pentium Pro processors from Intel, or they are comparable chips from smaller chip makers. Pentium processors are now the most popular in home systems, ranging in speed from 100 megahertz (MHz) and 133MHz to around 200MHz. Faster Pentium Pro processors can be found in powerful business systems.

If you're buying a new computer on a tight budget but want to get a functional multimedia system, you'll be interested in 100MHz Pentium PCs for around \$1,500, as well as 120MHz and 133MHz systems for less than \$2,000. These systems probably won't come bundled with all of the high-end extras, but they can run the majority of the newest software and should have no problem cruising the Internet.

But if you are interested in a system that can keep up with the latest software releases for a while longer, we suggest a 166MHz Pentium system. The 166MHz PCs are priced between \$2,000 and \$2,500 and come equipped with a lot of fun extras aimed at the home consumer. Of course, if you have the money and you want to get one of the high-end home systems, take a look at a 200MHz Pentium. For these systems, expect to spend anywhere from \$2,500 to more than \$3,000.

Before you buy a 200MHz system, however, there is something you should know. The PC industry is,



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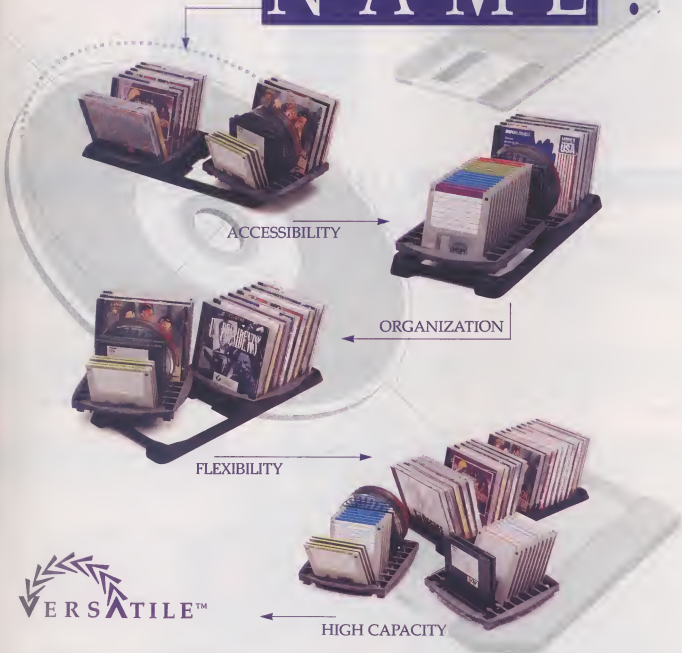
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as always, fluctuating, particularly concerning the microprocessor. PCs are about to undergo a major change. MMX (short for multimedia extensions) technology built into chips is expected to boost how quickly your PC can create three-dimensional (3-D) images, which will be a real boon to both the gaming and graphics industries.

So is it worthwhile for users to spend all that money when new chips are due out early next year? It depends. If you want to play the newest games or do a lot of graphics work, you'd better wait to buy until processors with MMX technology hit the market. You'll still benefit from the favorable pricing for fast systems, but you'll also be able to take your PC into the next era of 3-D computing.

■ **Memory And Storage.** Along with processing power, another major component to check for is the amount of random-access memory (RAM) the computer has. This is the amount of temporary memory your computer has to work with your programs. Even if you compromise on other components, you shouldn't on this one. Buy a system with as much RAM as you can afford.

Because most new systems are bundled with Microsoft's Windows 95 operating system, you should buy a system with at least 16 megabytes (MB) of RAM. The cost of RAM has dropped tremendously this year, making it cheaper for the computer companies to include. Software companies seem to be taking advantage of that fact and are increasing the amount required for their software to operate optimally. In fact, we've seen some mid-range systems available with 24MB and 32MB of RAM, but that's pretty powerful for doing everyday tasks. Of course, if you plan to do any high-end graphics, gaming, or number crunching and you have a hefty budget, you even may want to make the jump to 64MB.

Memory is a totally different component than the amount of storage your computer has. Storage capacity is determined by how big your hard drive is. Again, buy as much hard drive space as you can afford. Just as in other areas of life, storage gets used up quickly on PCs, especially if you're connected to an online service and/or the Internet. Online users frequently download large image, video, and sound files, as well as programs they find online. These large files can eat up precious storage space. It's common to see hard drives in the 1.2 gigabyte (GB) to 1.6GB range in today's low-end PCs. In fact, many mid-range

PCs include 2GB hard drives, and some high-end systems include 4GB drives.

■ **Getting Connected.** Although you may not think the online community has a lot to offer you right now, you may eventually change your mind. The number of Internet users is growing. According to an Internet Demographics Survey conducted this spring by Nielsen Media Research, Internet access in the United States and Canada has increased by 50% since the last study done in the fall of 1995. With a modem and an online service or Internet account, you can have your own electronic mailbox send and receive messages in seconds. You can access company online sites for support documentation or downloadable upgrades. You can take a virtual tour of the

Smithsonian or the White House. You even can make hotel reservations, order baseball tickets, and go shopping.

So while you may not consider a modem the most important feature right now, you may in time, so make sure you buy a fast one. Many systems are equipped with modems that can transmit 28.8 kilobits per second of data (Kbps). Some mid-range and high-range systems, however, have begun to include 33.6Kbps modems; this is as fast as you can transmit data with ordinary modems and phone lines. The faster a modem transmits, the faster it can send your message or download a file, so you spend less time online, and your bill is a little less from your service provider.

Almost all of the modems bundled in today's PCs include fax capabilities. That means

Where Do You Fit In?

Who You Are ▼

What You Need ▼

Price-conscious Consumer



- 100MHz to 133MHz Pentium
- 16MB of RAM
- 1GB hard drive
- 28.8Kbps fax/modem
- 4X CD-ROM
- 16-bit sound
- 14-inch, SVGA, .31dpi monitor

Average Home-office Consumer



- 166MHz Pentium
- 16MB of RAM (24MB or 32MB if you can afford it)
- 2GB hard drive
- 33.6Kbps fax/modem
- 6X CD-ROM
- 16-bit sound with wavetable synthesis
- 15-inch, SVGA, .28dpi monitor

Processing or Graphics-intensive Work, or Gamers



- 200MHz Pentium or Pentium Pro
- 32MB of RAM (64MB if you can afford it)
- 2GB to 4GB hard drive
- 33.6Kbps fax/modem
- 8X or 10X CD-ROM
- 32-bit sound with wavetable synthesis
- 17-inch to 21-inch, SVGA, .28dpi monitor (better monitor if you can afford it)

that along with sending data and files, you can send faxed documents to another computer with a fax/modem or to a fax machine. Most modems also include voice capabilities, so you can use your PC to take phone messages. Your computer has an advantage over a plain answering machine with features that let you do things such as configure the PC to ask callers to press 1 to leave a message for Dad or press 2 for the teen line.

Another modem feature that has become popular in mid-range and high-end systems is **Digital Simultaneous Voice and Data (DSVD)**. Ordinary modems only let you send data; if you want to talk to the person on the other end, you have to wait until the transmission is through before you can begin speaking. DSVD modems split the communication line so that you can send data and talk at the same time. This is great if you want to taunt an opponent as you play an online game or talk to a business contact as you transmit a proposal. The only catch is that both users must have DSVD modems for this to work. Some computer companies are taking advantage of this technology with their technical support departments. Technicians can dial into your system and discuss what they are doing to your computer as they work. While DSVD isn't a must in most systems, it can be a handy feature to have if your computer company offers this kind of technical support.

■ **Multimedia.** There's no longer a question of whether you should get a system with multimedia components (i.e., a CD-ROM

drive, sound card, and speakers). According to the Software Publishers Association, 83% of all PCs purchased last year were equipped with CD-ROM drives. And the CD-ROM titles spurring these sales aren't just games and education titles. The medium is used for all types of software, from desktop publishing and word processing to personal finance and travel. Most CD-ROM programs also include video and sound, which means you'll need that sound card and speakers, too.

The question now is how fast and loud you want your multimedia. At the low end of the market are **quad-speed**, or 4X, CD-ROM drives. They can transfer 600 kilobytes of data per second (KBps). Most multimedia applications still require at least a 4X CD-ROM drive. But you'll find that most PCs with 166MHz Pentiums include at least a 6X CD-ROM drive, which operates at 900KBps. Some include 8X drives (operating at 1.2 megabytes per second, or MBps). We even found a few 200MHz Pentiums with 10X CD-ROM drives, which operate at 1.5MBps.

Why the emphasis on faster speeds? Because the faster the speed, the more quickly your computer can pull data off a CD-ROM and place it on-screen. There's nothing wrong with a 4X CD-ROM drive as a minimum requirement, but if you're a mid-range user, consider at least a 6X drive to keep your computer playing the newest software for the next several years. If you plan to play a lot of interactive games or other such applications, a faster CD-ROM drive should be on your list of must-haves.

When we talk of computer sound, we usually talk in terms of bits. Ordinarily, the higher the amount of bits, the better the quality of sound produced. That doesn't apply as much this year, as most sound cards bundled with systems are 16-bit. However, the way those 16-bit sounds are created may differ. Unless indicated otherwise, most PCs use a technology called **FM synthesis** to create sounds through a sound card. The alternative is something called **wavetable synthesis**. This technology, previously used only by those in the music industry, plays digital samples of actual musical instruments. The result is a more realistic sound. A computer with wavetable synthesis can make piano notes sound as if they are coming from a piano; a computer with FM synthesis can make piano notes sound as if they are being generated by a computer.

Wavetable costs a little more, so we recommend that consumers on a tight budget simply get a system with an ordinary 16-bit sound card. Buyers looking for a 166MHz system will probably get lucky enough to get a wavetable synthesizer with their 16-bit sound card. Consumers shopping for a 200MHz Pentium or a Pentium Pro system actually may be able to take home a system with a wavetable synthesizer and a 32-bit sound card.

As for speakers, the more watts, the more power you get when you crank up the volume. Make sure the speakers come with an AC adapter, so you can plug them into an outlet instead of powering them through batteries, and make sure they are magnetically shielded

Keep In Mind . . .

Don't feel pressured into buying a top-of-the-line system if you don't think you really need it. There's a lot of processing power under that \$2,000 mark, says Joe Loiselle, pricing analyst at International Data Corp., a market research firm.

Consider what you need your computer to do before you buy. Look at the requirements of the software you will need to do those things. Then go PC shopping.

Always leave a little fudge factor. Look at what you need in terms of power today but buy something just a little more powerful to keep up with the new software that's bound to be developed in the next couple of years.

Your computer becomes "obsolete" when it isn't powerful enough to run the products you want it to. Depending upon what you want to do with the computer, that can take from a couple of years to more than 10 years.

Make sure the computer you buy has a couple of empty bays (or drive slots), in case you want to include additional storage drives in the future, and several extra ports outside and expansion slots inside for adding new peripherals and features.

Do you have room for the PC you want to buy? Will a mini-tower system fit on your desk in addition to a 17-inch monitor with speakers on the sides?

so they don't interfere with the rest of your computer equipment.

■ **Monitor.** As far as the monitor goes, it's up to your pocketbook which size you choose. Monitors may cost as little as \$200 and as much as \$1,200. Popular sizes for consumers seem to be the 14-inch monitor (measured diagonally), the 15-inch, and the 17-inch. People who work with graphics or do design work prefer the 21-inch. Of course, some specialty systems can work with even bigger screens. For instance, all computers in Gateway 2000's Destination line come with 31-inch screens.

To run today's popular programs, be sure to get a Super VGA, or SVGA, monitor with a resolution of at least 800 x 600 pixels. Noninterlaced monitors are preferable because they redraw the screen and refresh every line of the on-screen image on every pass. Interlaced monitors refresh every other line on a pass, possibly causing the image to flicker slightly.

You'll also want to check the dot pitch. This indicates the distance between like-colored dots on a monitor and is measured in millimeters; the smaller the dot pitch, the better. If you get a 14-inch monitor, don't buy one with a dot pitch any larger than .31mm, or you'll be putting strain on your eyes. If you get a 15-inch or 17-inch, make sure it has no larger than a .28mm dot pitch.

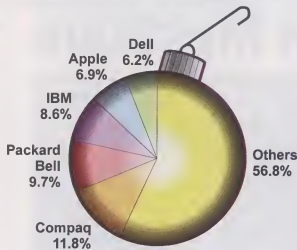
Last, but not least, check the refresh rate. This measurement indicates how many times per second the image on-screen is redrawn. Look for a rate of at least 75 hertz (Hz). If the refresh rate is too slow, you may be able to see the images flickering on-screen—another cause of eyestrain.

■ **Other ABCs.** Of course, processor speeds, RAM amounts, and hard drive capacities aren't the only specifications you'll see in computer advertisements. You'll also run across terms such as MPEG and USB or see measurements for VRAM and L2 cache. While these factors do contribute to the power of your PC, most average consumers won't have to be concerned with all their technical ins and outs.

For instance, your computer may be equipped with an additional 1MB or 2MB of video RAM. This memory is used to help produce video images. The video RAM (VRAM or DRAM) takes some of this processing

The Top PC Manufacturers

These figures are according to the number of units shipped in the United States in the second quarter of 1996.



Source: International Data Corp.

responsibility so the rest of RAM can be used to run programs more efficiently. About 1MB is common on mid-range systems, while high-end users may find their systems include 2MB or more. If video playback is important to you, this is something to watch for.

Some mid-range and high-end PCs also come equipped with additional graphics or video acceleration cards inside. Again, they help your microprocessor run video-rich programs more efficiently, freeing the microprocessor to do other things. The rule of thumb states that a video accelerator card with a 32-bit data path will correspond with 1MB of video RAM, while a 64-bit card will require about 2MB or more.

Yet another video option included in most systems is MPEG, or Motion Picture Experts Group. This is a compression standard that your computer uses to produce full-screen graphics at a fast rate so that the graphics appear as a movie. Almost all computers now have it because many programs (especially games) use MPEG to create video.

Also look for the Universal Serial Bus (USB). This is actually a peripheral port standard that was developed by a number of computer companies so you can set up peripherals with almost no hassle. Hardware companies are developing equipment that will connect to the new port, and you won't even have to turn off your PC to connect a new device to it. USB removes the headaches of telling your PC what address a peripheral is at. Just about every type of computer peripheral should be

available to plug into a USB port at some time: monitors, printers, keyboards, scanners, drives, mice, and so on. The USB port is a good thing to include in your PC this year, but you won't really see any hardware products developed to use the USB port until next spring. (For more on USB, see "All Aboard The New Bus" in this issue.)

One last specification you'll likely run across is a measurement of L2 cache, or 2nd level cache. Cache is a portion of memory reserved to increase the microprocessor's performance. The microprocessor can access data that it needs more quickly in the cache than taking the time to access it from the main RAM. 2nd level cache is cache memory for your microprocessor; it's considered external because it doesn't come already attached to the microprocessor. L2 cache speeds up processor performance on many applications and is commonly

found in high-end systems and some mid-range systems. Systems targeted to home consumers often come equipped with 256KB of L2 cache, while some more powerful systems might include 512KB.

■ **Some Extras.** Along with all the necessities, a few companies include built-in scanners so you can input images into your PC, extra input devices such as joysticks for playing games, and remote controls for the answering machine or mouse. Some companies offer additional storage drives, such as Zip drives that can store data on 100MB removable disks or LS-120 drives that can store 120MB of data on removable disks. While these additional options can tip the buying scales, remember that their cost has been added into that of the PC.

Also place service and support requirements on your shopping list. Options you should consider include the product's warranty (is it one year or three years? is the warranty for on-site repairs, or will you have to send the system back to the manufacturer?) and technical support (are they going to charge if something goes wrong with the bundled software?). (To find out which companies rank best, see "Making Contact" in this issue.) According to a recent Datapro market research survey, most consumers have found that it is reliability, not price or features, that should be their top priority when choosing a PC. ■

by Cindy Krushenicky

Chipping At The Pentium Mystique



Fast CPUs From Cyrix & AMD Offer Performance For Less

Intel's name is so intertwined with desktop computer systems that many consumers might not even realize competitors exist. The microprocessor Goliath's silicon empire far overshadows that of would-be rivals in the minds of most folk.

Until lately, that lack of knowledge on the average user's part didn't matter a whole lot. Intel microchips, though expensive, were the kings of speed. The Pentium line of central processing units (CPUs) simply outclassed all challengers. Because the CPU is the most important internal computer part—the brain of the PC—Intel can use its reputation and sheer mass to exert the kind of stranglehold on hardware that kingpin Microsoft has on software.

Intel's reign is far from over, but this year, consumers have a few alternatives that look good from all angles: price, reliability, and, for the first time, performance.

■ The Competition. While Intel still has fast chips aplenty to tempt your need for speed, much of the excitement today focuses on two smaller lines: Cyrix System's 6x86 chips and Advanced Micro Devices' K5 line. A

representative from either set of chips might make you think you have a Pentium, but your bank account will know the difference.

"We offer the same performance for 20% to 25% lower cost," says Dean Whitehair, an AMD spokesman. When the CPU is cheaper, an entire system can be built much less expensively. As an example, Whitehair points to Everex Computers' 995 K5-PR90 system, which is fully configured for multimedia with an AMD K5-90 CPU, video and sound cards, a CD-ROM drive, and a monitor for \$995. "For under \$1,000, it's an incredible buy," Whitehair says.

It sounds good, but what exactly does it mean to bring home an "AMD K5-90" or a "Cyrix 6x86 120+?" Looking at the fine print, you might notice the Cyrix chip in question actually has a clock speed of 100 megahertz (or 100MHz, meaning it carries out 100 million operations per second), but it is referred to as the 120+. Is that a good thing? How can someone know what they are really buying?

Though the clock speeds of Cyrix chips are lower than those of the equivalent Pentiums, that doesn't necessarily mean performance suffers. With today's microprocessor architecture, a better way to measure a chip's power rather than simple clock speed is the P rating. This rating is determined by testing how a CPU stacks up against a Pentium in the same situation.

For example, a Pentium 90MHz chip might be placed in a computer system with a set of carefully documented peripherals. A

benchmark utility program is then run on the computer. Benchmarks are programs that simulate real-world applications such as word processors, spreadsheets, and graphics programs and measure how fast the computer muddles through them. An average is taken from different tests, and the system's speed is expressed as a number. Benchmark results from different computer systems can be compared to give a more accurate idea of how fast different computers run.

Instead of testing different systems in this case, we're testing different CPUs. Once the benchmark for the Pentium-powered system is recorded, the Pentium CPU is taken out and replaced with a processor from AMD or Cyrix. Everything else about the system stays the same to ensure that any benchmark differences are caused by the processor itself. If the new chip wins the same benchmark rating as the Pentium 90 but scores less than a Pentium 100, the chip is given a P rating of 90—the quickest Pentium it can tie or beat. Because the second CPU might have actually scored slightly higher than the 90MHz Pentium, the P rating might be expressed as 90+. (Intel, as expected, claims that P ratings are misleading.)

Once you know the P rating of a given chip, you can make an apples-to-apples comparison of chips from different companies. Rather than relying on the at-times tricky names of the various processors for a due about speed, the P rating gives buyers a clue of facts to help them choose the fastest system they can afford.

■ More For Less. One of the first places to look for a high-performance bargain is Cyrix. We found the company's 6x86 line of Pentium-compatible CPUs through a variety of mail-order houses for prices much lower than comparable Intel chips. The going rate for a 6x86 P120+ was around \$130, while the Pentium 120MHz cost at least \$50 more. The difference is even greater as you go up in speed. While a Pentium 166MHz can cost about \$550, the 6x86 P166+ is only \$350 and actually runs a bit faster.

Faster than any Pentium (but not quite up to Pentium Pro level; see below) is the 6x86 P200+, which has a clock speed of only 150MHz but attains slightly higher benchmark scores than a Pentium 200MHz. This latest Cyrix CPU achieves better performance across the board in part because of its use of a 75MHz bus. A computer's bus is the main path used to shuttle data around the motherboard from the

Cyrix's speedy 6x86 line of CPUs runs neck-and-neck with Intel at lower cost.



Just Around The Corner

Why You May Want To Wait

CPU to other components. Today's Pentiums are designed to use a 60MHz or 66MHz bus, which limits their theoretical top CPU clock speed to about 200MHz. With the introduction of a faster bus, Cyrix can boost future clock speeds up to about 225MHz without a major chip redesign. That's a full 50% faster than the Cyrix P200+ 150MHz chip.

AMD's K5 line doesn't include anything as fast as the 6x86 200+ yet, but its Pentium-class CPUs are available with P ratings of 75, 90, and 100. They run a bit cheaper than Cyrix chips. By the time you read this, the K5-PR120s and 133s should be in the pipeline as well. AMD's Whitehair says the end of the year will see the release of the PR150 as well as information about the next AMD line, code-named the K6.

"We will be competing with the very high-end Pentiums and the Pentium Pros," Whitehair says.

As AMD moves to the K6 next year and Intel beefs up its next-generation line of Pentium Pro, Cyrix plans to begin production of its M2 chip, which will probably be called the 7x86. The M2 will include the multimedia extension set (MMX; see sidebar at right), and the company intends to market it as a more affordable answer to Intel's Pentium Pro.

AMD and Cyrix can compete toe-to-toe with Intel now and in the future because their chips are all compatible with existing Pentium motherboards. The K5, 6x86, and upcoming M2 all use the standard 64-bit "Socket 7," as it is known. In fact, Whitehair says, you can take out an older Pentium, say a 75MHz, and drop in a brand-new K5 PR150 for a dramatic speed increase. Depending upon the system's bus speed, you may or may not reach the full potential of the K5 chip, but either way, this type of Intel-less upgrade is a great way to boost performance within a budget.

Whitehair says the only potential speed bump is the CPU identification code written into the system BIOS (basic input/output system) of some machines. A decent computer shop or CPU vendor should be able to take care of this problem for those not initiated into the ways of electronic magic.

The only problem with such a scenario is that many people don't live anywhere near a good computer shop and must instead rely upon mail-order computer firms to supply them with the non-Intel parts they desire. Relatively few name-brand companies offer systems built around alternative CPUs.

Whitehair says AMD chips, for example, are found mainly in systems from second- and

The classic dilemma when buying any computer is that something better will always be out before you've even had a chance to run your first program.

Our general advice in the face of this unavoidable fact is that hesitating won't do you a whole lot of good. Sure, a faster system will come out next month or next year, but you don't gain anything by depriving yourself of a computer while forever waiting for the next big thing. Instead, you should buy a machine with a few upgrading options as a bit of insurance against the rising tide of technology.

This year, however, there may be a bit more to be said for hanging on. While today's computers are, of course, better than ever before, a slew of extra-impressive machines is just around the corner. How is this different from the normal situation? It's because of three letters: MMX.

Intel's multimedia extension set (MMX) is a group of 57 new instructions soon to be built into many types of CPUs. Basically, MMX lets a system display more advanced graphics and play richer audio than today's machines. The extra boost will be a boon for anyone who regularly uses multimedia software, including games and educational titles.

The dramatic performance increases promised by MMX—Intel claims 300% is possible with some types of software—make it a little tougher to shell out money for an expensive, non-MMX CPU now. Kim Gibbons, an Intel spokesperson, says today's Pentiums are worth having, of course.

"The Pentium processor still provides the best multimedia machine today," she says. "You have the opportunity to use the machine now rather than wait 'til the next year." Gibbons says those who buy now can always upgrade in the future with a

new Intel OverDrive processor at a yet-to-be-determined price.

That's bound to be an expensive path, however. Using MMX requires replacing the entire CPU. We'd be surprised if the sort of OverDrive chip Gibbons mentions doesn't cost several hundred dollars.

To make things even more complicated, the early part of next year also will see an expansion of Intel's Pentium Pro (P6) line incorporating MMX, Gibbons says. First up will be what has been known as the Klamath processor, an MMX Pentium Pro that will probably run at 200MHz. Standard Pentium machines will be locked out of the Pentium Pro choice because the P6 uses a different-sized socket than the Pentium. If you want to run a Pentium Pro later, you'd better not buy anything but a Pentium Pro today.

Cyrix offers an alternative for those who want Pentium quality now and P6-MMX performance later when the prices come down to a more manageable level. The company says its next line of processors, code-named M2, will offer speed comparable to a P6, include MMX features, and fit into a standard 64-pin Pentium motherboard socket.

How realistic and cost-effective this option turns out to be is up in the air until some hardware starts rolling into the marketplace, but it gives high-end users another route to follow besides buying a Pentium now and scrapping the whole thing for a P6 half a year down the road.

Knowing such a variety of advanced CPUs lies just around the bend makes it harder than ever to take the plunge and buy a system now. Sure, it would be nice to jump into the fray today and bring home a machine; but then again, maybe it wouldn't be so bad to wait just a little longer. □

third-tier manufacturers such as CyberMax and Everex. In the 286, 386, and 486 days, top names such as Compaq and IBM occasionally used AMD, but by and large the 90 million CPUs AMD has sold are found more in the Far East and Latin America than in North American computer retail chains. Cyrix sells its own line of

6x86-based systems through the mail, but aside from that, the story isn't much different.

■ Intel Advantage. Many consumers are unwilling to take a chance on a mail-order company with which they are unfamiliar. Even though service at a big

chain may be no better, there's still something reassuring about dealing with a place you can visit in person.

In most areas of the country, those are the shelves where Intel dominates. Although Intel chips might cost more, they still aren't a bad choice. Compatibility is not an issue when you're dealing with the world's largest supplier of desktop CPUs. Intel chips perform well, too. The 200MHz Pentium is the fastest chip going for standard 66MHz bus motherboards. For speed demons with spare money, there's the vaunted 200MHz Pentium Pro, a next-generation processor designed for completely 32-bit operating systems such as Windows NT and OS/2. Though super-fast, the Pentium Pro is expensive for the home consumer at \$750 for the chip alone.

Kim Gibbons, Intel spokesperson, says the 200MHz Pentium processor released back in June was the last big move for Intel in 1996, but that still leaves a hefty line of chips starting



AMD's family of 586 CPUs is the leader in price/performance for its class.

at 75MHz for holiday buys. New Intel chips featuring the long-anticipated MMX set were due to arrive by the Christmas season, but their launch date has been delayed into the first quarter of 1997. Intel cited concerns that it wouldn't be able to keep up with initial demand as the main factor in the decision.

Come Christmastime, Gibbons says, consumers should see stores packed with 200MHz, 166MHz, and 150MHz models. The "lower-end" \$2,000 price range will be the haunt of 133MHz and 120MHz CPUs, she says. Gibbons predicts the 166MHz and 200MHz processors at the high end of the price scale will power multimedia monsters with all the goodies.

"There will be a lot of bundling with the higher-end machines," she says. Bundling means manufacturers will throw in extras such as bigger monitor screens, faster CD-ROM drives, huge hard drives, and other performance parts. Such bundled packages won't be the cheapest way to go, but consumers might get more for their money if they go for the gold, Gibbons says.

"When you look at the package as a whole," she says, "it may be a better value for your dollar."

Before you shell out extra money for a system based on a fast Intel processor, however, it may pay to look at the package a little more closely. Pentium 120MHz and 150MHz chips use a slower bus speed than 100s, 133s, and 200s (see chart). That means machines built around the 120s and 150s do not run as fast as you might think. On systems that are otherwise the same, a 150MHz Pentium often does not run significantly faster than a 133MHz Pentium.

Even a 66MHz bus speed becomes a bottleneck for the 200MHz Pentium. It's faster than the 166MHz model, but perhaps not enough to justify its inflated price. High-end users might be better off buying a 166MHz and spending the extra money on RAM, at least until MMX arrives and the 200MHz chips are updated.

Whatever Pentium consumers buy, Gibbons says, their multimedia, educational, and game titles will benefit from increased speed over yesterday's 486s and slower Pentiums.

"They will definitely see a difference," she promises.

Unfortunately, that difference comes at a rather steep price. That's long been the story in the computer world, but with Cyrix and AMD finally beginning to compete with the best Intel has to offer, buyers may soon be able to choose a different ending. ■

by Alan Phelps

For More Information:

AMD
(800) 538-8450, (408) 732-2400
<http://www.amd.com>

Cyrix
(800) 462-9749, (214) 968-8388
<http://www.cyrix.com>

Intel
(800) 538-3373, (503) 264-7354
<http://www.intel.com>

Throwing In The Chips

The holidays should see the chips below battling it out in the increasingly competitive CPU market. Pentiums define P ratings, so their rating is the same as their clock speed. As discussed in the main story, however, the 120MHz and 150MHz chips don't offer the dramatic performance boost you might expect over the chips immediately below them in the pantheon. The P rating system also is a bit unfair to the Pentium Pro, which is optimized for 32-bit code and does not perform as well running average Windows 3.x and Windows 95 applications. Rest assured that on Windows NT and OS/2 systems, it is the speediest choice.

Name	Bus/clock speed (in MHz)	P rating
IntelPentium 100	66/100	100
Pentium 120	60/120	120
Pentium 133	66/133	133
Pentium 150	60/150	150
Pentium 166	66/166	166
Pentium 200	66/200	200
Pentium Pro 150	60/150	n/a
Pentium Pro 166	66/166	n/a
Pentium Pro 180	60/180	n/a
Pentium Pro 200	66/200	n/a
Cyrix6x86-P120+	50/100	120
6x86-P133+	55/110	133
6x86-P150+	60/120	150
6x86-P166+	66/133	166
6x86-P200+	75/150	200
AMDK5-PR75	50/75	75
K5-PR90	60/90	90
K5-PR100	66/100	100
K5-PR120	60/90	120
K5-PR133	66/100	133
K5-PR150	not yet released	150

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Where To Buy?

The Perfect Price/service Combination Is Out There—if You Know Where To Shop



About 34 million households owned a PC as of spring 1996. You plan to join the ranks. After faithfully studying *PC Novice*, you know what kind of processor, how much RAM, and how large a hard drive you need. Thinking all of the important decisions have been made, you start asking friends where you should buy your computer. Three people tell you to buy from any large retailer, because they're "all basically the same." Two give you the names of small computer specialty shops. One says you always get the best deals by buying through the mail.

You decide to check out the Computer section of the yellow pages. The names of 20 or 30 stores leap off the page at first glance, so you decide to go for the old close-your-eyes-and-point method. After all, as long as you get the system of your dreams, what does it matter where it comes from, right?

It matters. Where you buy your system has the potential to heavily affect your satisfaction with the end product somewhere down the line. The advice you get in selecting a system, the after-purchase service you will receive, and even the price of the system you select, are determined to a large extent by where you purchase your PC.

In the broadest terms, there are two ways to buy a new computer: through a local retail outlet or through the mail. Each of these distribution

channels can be segmented further. Retail distribution includes large mass merchandisers such as Wal-Mart or Kmart; general appliance and electronics stores such as Best Buy or Circuit City; large computer specialty chain stores such as CompUSA or Computer City; and smaller computer sales and service stores called VARs, or value-added resellers.

Buying through the mail includes buying directly from large, name-brand manufacturers such as Gateway or Dell (this channel usually is called **direct from manufacturer** or **manufacturer direct**); and buying from smaller "no-name" operations that advertise mostly in computer trade magazines (traditional **mail-order**). Most people use the term "mail-order" loosely to cover any type of purchase made through the mail, but we will differentiate mail-order from manufacturer direct in this article.

We're going to explain the factors involved with the different methods of buying a home computer system. Remember, our descriptions are generalizations; it's possible to have good or bad experiences with any one of these sellers. To arrive at the conclusions described below, we talked to various companies about their services, found out what users were saying online about different purchasing methods, and relied on our own buying experiences. We also had access to one of the best information sources

around: our readers, who have supplied us over the years with volumes of data concerning their purchasing experiences.

■ Big Retail. Lots of people shop at big retailers like Wal-Mart and Kmart for everything from clothes to furniture. Now you can buy computers there, too. These and other mass merchandisers are conveniently located, and because of their buying power they have excellent prices, but unfortunately, their PC selection is limited.

Also limited is the amount of post-purchase service you will get at these stores. That's not to say that your new system won't have a warranty and/or a guarantee; it will, but taking advantage of these features can be a hassle. While almost all mass merchandisers have liberal return policies, they usually want you to deal directly with the manufacturer when you need maintenance or repairs.

Selection and service improve when you look at stores that specialize in appliances and electronics. Chains such as Best Buy and Circuit City offer a wider variety of computer models and are more likely to offer some sort of service program. The systems at these stores are usually spread out on counters and consumers are encouraged to poke, prod, and play with them.

"We decided to purchase from the electronic superstore because we wanted to be able to see what we were getting," says Tony Lyman, a

certified public accountant in Fresno, Calif. "We haven't had to call technical support since we ironed out the initial starting up quirks, so the service package hasn't really affected us."

Among large retailers, the best service packages are available at the computer specialty stores. Chains such as CompUSA and Computer City offer a wide variety of service programs, including on-site coverage and 24-hour technical support. They also offer the largest selection of computer models. Where you might find only four or five models at some mass merchandisers, computer superstores may have two dozen or more.

The combination of wide selection and superior support helps the computer retail chains edge out the electronics stores for popularity among consumers. In an Intelliquet Computer Industry study in the spring and summer of '95, 34% of respondents bought at a computer retail store, and 22% bought at consumer electronics stores.

Large retailers may be fine for most consumers, but they are lacking in one area: flexibility when it comes to altering the details of your system. Most mass merchandisers, electronics/appliance stores, and computer chains prefer to sell systems the way they come from the manufacturer. If you want to "custom-build" your computer, you'll need to turn to one of the other distribution channels.

■ **VARs: The Other Guys.** If you know enough about computers to specify what types of components you want, or if you know very

little about PCs and want lots of handholding before and after your purchase, consider VARs. A local value-added reseller might ease your anxiety about your first computer purchase—but the store will charge you for it. Traditionally, this channel has catered to businesses or individuals willing to pay a premium for service. A 1995 study conducted by the research firm Dataquest found that only 6.3% of consumers took this route, while just 3% of Intelliquet's respondents went to VARs.

A VAR will construct a system designed to suit your specifications. You'll talk to people who are very knowledgeable about PCs and who generally have time to discuss your needs. Most shops offer custom software setups as well as individual hardware installations.

A VAR is a nice option for buyers who want the safety net of immediate technical support. Be aware, though, that while most VARs provide superior service, not all of them do. Make sure you get your money's worth if you purchase through this channel. You'll pay more for systems bought through VARs than you will by mail or at the superstore, but if you find the right VAR, it may be worth it.

"The personal attention of a good VAR is worth paying a little extra," says Brian Jacobs, a dentist from Buffalo, New York.

What are the biggest advantages of buying from VARs? Location and lots of service. Unlike buying through the mail, you can take problems to a person instead of talking to a disembodied voice on the telephone. If there

are any problems with your system, you can take it to the local shop for a checkup.

The biggest disadvantages? Price. Also, the quality and reliability of VARs varies greatly. Not all VARs provide a high level of service, so do some homework to make sure you don't pay extra for something you don't receive.

■ **Buying Sight Unseen.** Historically, buying systems through the mail has been left to the technically elite, those gurus who knew enough about computers to be sure of what they were getting by description only. They didn't need the comfort of a hands-on experience before buying. Apparently, as the population in general has become more technically savvy, more people have become comfortable with the notion of buying through the mail. An International Data Corp. study from the first quarter of 1996 shows purchases via mail grew 121.8%, electronic superstores grew 53.9%, and VARs 10% over the previous year.

While ordering by mail might seem a little risky, it's the only way to get some brands of systems. Gateway and Dell, for example, only sell systems by mail, so you won't find their units on store shelves—at least, not yet. Gateway's Destination, the TV/computer combination, will be available in stores soon. Gateway also is about to launch a test of two showrooms in New Haven, Conn., and Charlotte, N.C.

There are two distinct classes of companies who sell through the mail. There are true

QUESTIONS TO ASK

Generally buying direct or from a superstore is cheaper than going to a VAR. Generally the VAR provides the best and most immediate service. But we did talk to people with experiences that differed from these basic guidelines. When you're looking to buy a computer, choose the type of seller that is most likely to meet your needs and then ask the following questions:

1. Do you offer free technical support? Find out how much they charge if not. The cost of technical support down the road may outweigh any initial savings.

2. During which hours is your technical support available? Make sure it's available at times that are convenient for you.

3. How long have you been in business? Don't always rule out young companies (even IBM started somewhere), but the longer a company's history, the more likely it is to be around when you need service.

4. What warranty do you offer? Be sure to check into the extended warranty information. Most extended service programs merely lengthen the coverage time, but they may include added

perks. Gateway's Gold Premium Service agreement, for example, extends the period of time support is offered, but it also offers a dedicated 800 number for prior access to technical support. The additional perks, however, will cost you. Gateway's Premium package costs \$99 at the time of purchase or \$129 during the first year.

5. Do you support the bundled software? The PC manufacturer may be able to help you with all of the electronic parts inside the machine, but can they help you prepare a presentation in Microsoft Excel?

6. What components do you include in the system? This shouldn't be a secret.

If manufacturers satisfy you with their answers to these questions, the chances of you having a good experience will improve. You may decide you don't need someone to show you how to run the software that comes bundled, but you do need help with the hardware. Remember that no question you ask is ever too basic or too nosy. Answering questions is a manufacturer's job. If they don't put you at ease when you're buying, the situation probably won't improve after the purchase. □

manufacturers, who build some of their own technologies into systems and have grown large enough to have recognizable brand names, such as Gateway and Dell. Buy from these companies, and you purchase manufacturer direct. Then there are the no-name outfits that just put together other companies' parts, slap a name on the front, and sell through the mail. These are mail-order vendors who try to get business by promoting super-cheap systems in computer catalogs.

Buying direct from a large Fortune 500 manufacturer like Gateway or Dell is one thing, but purchasing a PC sight unseen from a "no-name" mail-order outfit can be a risky proposition. Some of these businesses are here today and gone tomorrow; they offer great prices to attract customers, but the parts in their PCs can be of questionable quality. Fortunately for consumers, as prices have plummeted for PCs through retail outlets, many of the less-reputable mail-order places have disappeared.

Seventeen percent of buyers involved in the Dataquest study, and 30% in the Intelquest survey, purchased their systems through the mail (manufacturer direct and mail-order). The advantages to buying systems through the mail are simple enough: you don't have to leave your home and you often can customize your system for less than what it would cost to get a VAR to do it.

Companies that sell direct may have a pre-made system that meets your specifications, but if they have a machine that's even close to the one you're looking for, they have more freedom to make adjustments until the system suits your requirements. You might end up paying a little more than you would from a retail store, especially considering the amount paid for shipping and handling (approximately \$95 for a desktop system from Gateway), but you will have more control over your system's components.

Companies that sell exclusively through the mail generally sell the newest technology as soon as its available. They don't have to worry about the inventory of other distribution channels such as the retail store or VAR. This lets them adjust prices according to the latest technology and provide customers with updates that may be delayed on their way to the shelf, says Katherine King, associate manager of corporate communications at Gateway.

The biggest drawback to buying through the mail is that your system is probably coming from a land far, far away. These companies don't provide local fix-it shops that you can run to with every little glitch. If your problem goes beyond something that can be solved over the phone, you may have to send the system in. The service you receive probably will be good,

but you have to pack up the machine, send it, wait for it to be serviced, and wait for it to come back. If the problem isn't corrected, you start the whole process all over again. The days lost in going through the mail system reduce productivity. The miles between you and the technician also make it easier for them to dodge confrontation when you try to complain that your pride and joy isn't ready as soon as possible. Face-to-face contact prompts results.

If you choose the mail route and you're currently hooked up to the Internet, contact with a real person can be reduced even further. Gateway, Dell, and Micron Electronics have World Wide Web sites that display the systems available and let you customize by selecting your own options. By the time you talk to a company representative, the bulk of your decision making can already be done. Ordering from a Web site gives you the advantage of having all of the product information at your fingertips. You can sift through the reading and decide for yourself what you do and don't need with no pressure from a salesman. If you have questions, you can call for assistance before ordering.

■ Weigh The Options. One of these distribution channels should emerge as a leader as you decide what combination of important factors is important to you. Mass merchandisers offer convenient locations and great prices, but their selection, purchasing assistance and post-purchase service are often lacking. Large general appliance and electronics stores have a better selection and offer more services; large computer chains offer tremendous selections and better service yet. VARs are a local option that will provide you with the most personalized service before and after your purchase, but they also have the highest prices.



















Buying through the mail can provide the newest technology at a reasonable price. But you're purchasing sight unseen, and you must learn to fend for yourself with only the voice of the technician over the phone to guide you.

Consider these differences as you decide what level of support you're likely to need—and how much you're willing to pay for it. ■

by Elizabeth Panska

Choose Your Channel

This comparison of services and price should help you choose among the retail, direct, and VAR distribution channels.

Channels + Features	Major Merchandisers (Wal-Mart, Kmart, etc.)	Large Electronics/Appliance Chains (Best Buy, Circuit City, etc.)	Large Computer Chains (CompUSA, Computer City, etc.)	VARs	Manufacturer Direct (Gateway, Dell, etc.)	Mail-order (no-name Vendors)
Price	\$	\$	\$	\$	\$	\$
Selection				 (will customize)	 (will customize)	 (will customize)
New Technologies						
Purchasing Assistance	Q&A	Q&A	Q&A	Q&A	Q&A	Q&A
Post-purchase Assistance						

Note: Small, medium, and large icons are roughly equivalent to low, medium, and high levels of a particular feature. Except for price, the bigger the icon, the better.

THE HOME TEACHER™ SERIES



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Equipping A Home Office

About 50 million people are working from their homes this year, according to market research figures. This new trend in business may be a result of corporate downsizing, or it may be because more employees have children at home. Whatever the reason, computers and technology are shortening many businesspeople's commute from several miles to a few feet to the home office.

Features such as fax/modems, telephone answering systems, and desktop publishing software in today's PCs allow many small businesspeople to replicate the tools of a big office, and most of these options don't require a lot of high-tech expertise to set up and use.

What do you need to properly outfit a home office? Most home businesspeople can't afford a shiny, new system when they start out, and that's fine. You can make do with what you have for as long as you need to. Eventually, however, you may find that your old 386 doesn't keep up with the new

technology as well as you would like, and you need a new system.

Since there's probably not a lot of money in your budget to talk to a home-office consultant, we did it for you. Here, we've

compiled a number of tips for all sorts of home offices, including what types of equipment you need (and don't need) and what some consultants would consider the ultimate home-office setup. ■

■ Habits Of The Home Office



Still wondering how much you should expect to spend on a computer? More than half of the PCs acquired by the self-employed in 1995 cost \$2,000 or more, and only 7% were acquired for less than \$500, according to the market research firm Computer Intelligence InfoCorp.'s 1996 Consumer Technology Index.

CII's Index also indicated that 31% of those self-employed people surveyed used online services to aid in their home-business dealings, while 23% used the Internet.

If you're like many home businesspeople, you can expect to spend a lot of your time at the computer. According to CII, 40% of those surveyed spent 20 or more hours at the PC each week. Word processing software was the most popular software used, while spreadsheets came in second. □

■ Outfitting Tips



■ If you plan to be doing an extensive amount of graphics or number crunching, you are going to want a fast PC. An average home businessperson

can afford to get by with a Pentium computer between 100 megahertz (MHz) and 133MHz, while those people requiring a lot of processing power need either a 166MHz Pentium or 200MHz Pentium computer.

■ No matter what type of computing you do, buy what you think you need plus a bit more, says Ernest Fine, vice president of technical services at Cygnet Computing Services Inc.

■ No matter what your business, the more random-access memory (RAM) you can afford, the better. If you operate computer-aided design (CAD) programs or other graphics-intensive software, look at systems with at least 32 megabytes (MB) of RAM, and perhaps even 64MB if it's in the budget.

■ Hard drive capacity is another place to get as much as you can afford. Don't get a 850MB hard drive in a new system; you'll be cheating yourself. Fine says that hard drives in the one gigabyte (GB) range are at the price point where you'll get "the most bang for your buck."

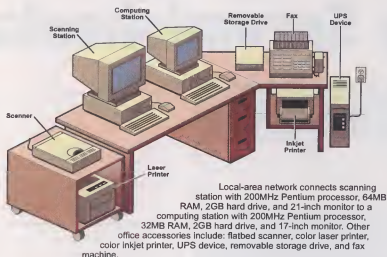
■ Some businesses may demand such high-quality printing that it wouldn't make economic sense to spend the money to buy a suitable printer. For instance, if you are in advertising or create artwork for a magazine, both of which require four-color separation

output, you won't be able to afford the expensive equipment to do the final printing. It's more cost-effective to take the printing to a professional printhouse.

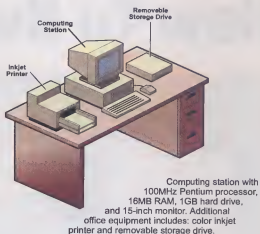
■ If you use one PC for word processing and another for bigger tasks, create your own local-area network (LAN) between the two computers to share printers and files. Networking capabilities are built into Windows for Workgroups 3.11 and Windows 95, Fine says; all you need are LAN adapter cards and the cabling to connect them.

■ Consider an Integrated Services Digital Network (ISDN) connection to the Internet if you plan to do a lot of marketing, correspondence, or research on the 'Net. The digital connection makes it much faster to get to the online information you need, saving you time and money in the long run. □

Ideal Home-office Setup



Budget Home-office Setup



Who Needs It?



■ A scanner is mandatory for anyone doing desktop publishing, beneficial for those in the craft market, and a plus for any small businessperson

who wants to store printed pages or logos on the computer. Although **sheetfed scanners** take up less space on a desk, they only can scan images on paper and not bulky items. **Handheld scanners** are not ideal for people in publishing because they are often less accurate than other types of scanners. **Flatbed scanners**, however, perform adeptly, scanning paper documents as well as bulky items such as books or images off clothing.

■ Only home-office people who are just starting out, are cramped for space, or aren't sure exactly what direction their home office is going should really consider a **multifunction device**, which includes a printer, scanner, copier, and fax machine all-in-one. This is because the components in these devices may not be as high-quality as those you might purchase separately. For example, many include a 300 dots per inch

(dpi) resolution printer and scanner, and a fax machine operating at only 9600 bits per second (bps). Besides, if one component breaks down, you do without all the devices while the machine is being repaired.

■ A **secondary storage device** is a must for any small business needing to make backup copies of important data (which is every business), be it in the form of simple diskette backups, tape drive backups, or a removable cartridge drive. Tape drives can make incremental copies of your hard drive every week or month, while removable cartridge drives can be used for backup, to archive large files, or to store and run less-used programs. Users in the desktop publishing industry have historically turned to SyQuest drives to store large graphics and publishing files, but just about any business can profit from removable cartridge drives that offer an infinite amount of storage.

■ Every home business can benefit from using a **fax/modem** to send faxes to a group of recipients or to schedule a fax to be sent at a specific time. Faxes received are already in your PC for you to work on. If, however, you plan to fax a lot of paper documents or anticipate that you will receive a large number of faxes, Donna Yeaw, president of The SOHO Connection consulting company in Stone Mountain, Ga., says you should consider an

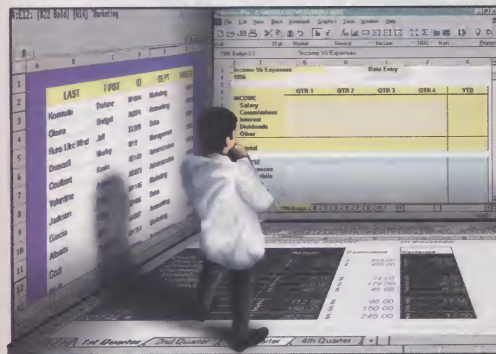
additional, standalone fax machine.

■ Home businesses handling important data that can't easily be replaced should save up for and invest in an **Uninterruptible Power Supply (UPS)** device. A UPS, which costs around \$200, can keep a computer running long enough to save your data in case of a power outage and can keep your computer operating during brief brownouts, says Ernest Fine, vice president of technical services for Cygnet Computing Services Inc.

■ **Inkjet printers** are a good choice for just about every home businessperson because they are so affordable now and offer color printing (although not at an incredibly high quality). Units in the 300 dots per inch (dpi) x 600dpi resolution range can cost around \$300. These printers are especially desirable for someone who doesn't need exceedingly high-quality documents (an accountant, for instance) or someone in the craft industry who wants to create iron-on transfers.

■ The **laser printer** is a must for anyone in the publishing or design industry that requires sharp printer images. (Some offices use laser printers in addition to inkjet printers.) While a color laser may be out of many users' price range (costing several thousand dollars), you might spring for a black-and-white laser and have the occasional bulk color print job done by a professional printer. □

How To Buy Spreadsheets



Your Needs Define The Best Number Cruncher

worked with one package, you'll figure out the others fairly quickly.

These packages all have basic tools no self-respecting spreadsheet should be without: a variety of toolbars, drag-and-drop functionality, editing tools, features that help users get started on a task (called Wizards, Experts, or Assistants), templates, macro programming,

Ask computer users to talk about their word processors, and you'll hear praises about this or that feature and how well the program automates tasks. Ask the same users about their spreadsheets, and you'll get, "It lets me add columns of numbers" or "I have no idea."

Spreadsheets, probably one of the most misunderstood applications, are often hard to discuss because of their surprising versatility. In short, they're not just for numbers anymore, and that makes it hard for users to describe what kind of spreadsheet they're looking for.

Tom Williams, product manager for Microsoft Excel, says it's difficult to pinpoint how people use these programs. Some enlist spreadsheets as glorified calculators; others use them for list management for contact information, charting, and macro programming.

"When spreadsheets came out," Williams says, "they were tools used by accountants, scientists, and engineers. (Manufacturers have) had to catch up with changes in the market and user demands to accommodate the increasing number of novice users and

users employing spreadsheets for purposes other than what they were intended."

Pam Sullivan, product marketing manager for Lotus 1-2-3, agrees, saying technological changes in recent years have changed how people work.

"They need to be able to complete their everyday spreadsheet tasks quickly and easily," she says. "But they need to go beyond that, too. They need to collaborate with other people more effectively and communicate with other people easily, and they need to be able to do that with cutting-edge technologies such as the Internet and the World Wide Web."

For software developers, this means there is a need to create one-size-fits-all spreadsheets. For users, it means a market filled with choices that, without in-depth investigation, seem almost identical.

■ **Sorting The Similarities.** In the spreadsheet software market, there are three main contenders: Excel, Lotus 1-2-3, and Corel Corp.'s Quattro Pro. What's the difference among the three packages? On their most basic level, very little. For simple needs, if you've

formulas, @functions (which let you do such things as add a column of numbers or perform statistical regressions), charting, and database features. If you need to find, share, and publish a lot of material through the Internet or your company's intranet, you also should consider the spreadsheet's connectivity features, Lotus' Sullivan says.

What distinguishes the packages is how they let you execute tasks. For example, Excel lets you add a column or row of numbers using the @SUM function or by highlighting the range and clicking the AutoSum button. Quattro Pro uses a similar setup. The upcoming release of 1-2-3 for Windows 95 and Windows NT makes it as simple as typing the word *total* in a cell. Which works for you depends upon how many steps you're willing to take to perform a task.

For most users, any package will work if you're doing only basic spreadsheets for budgets, quarterly sales, or expense reports. If this is the case for you, read no further. Pick the program that is compatible with the other software on your system. You'll have a package with an interface similar to programs your office personnel is already familiar with

(reducing the learning curve), and you know you'll be able to import and export data from one application to another with ease.

Users requiring the high-end tools don't have it so easy and should prepare to do some exhaustive research. Talk with friends, colleagues, and peers inside and outside your company. What package do they like and why? What features make their job easier or harder? (Don't, though, work on the opinion of just one person; what may be a problem for one person may not be for another.) Also peruse postings in Usenet newsgroups and forums on online services. Another option is to call the manufacturers; they generally have materials that highlight a program's "star" features and explain how their basic toolsets differ from the competition.

Several accountants we talked to said that it's hard to find an outright bad product. Paul Blanck, a CPA in the Kansas City, Mo., firm Blanck & Lancey, says, "I'm not sure that with as sophisticated as spreadsheets are, you can really make a mistake when picking one. The feature sets are so similar."

Ironically, when we talked to accountants and engineers, we learned that for all the functionality companies are piling into their programs, power tools are generally not the things that draw people to a spreadsheet. One accountant said he and his colleagues often comment that they only use half the tools in a spreadsheet package and don't care about the other half. The general consensus is that you want basic productivity tools that let you perform tasks as quickly and with as few steps as possible. Beyond these basic tools, preferences are highly individualized.

Take Blanck, for example. One would expect a CPA to target Excel's array of 300 @function as his favorite features. Instead, Blanck chose simpler options such as the spell checker, the Undo command, Print Preview tools, shrink-to-fit printing, and the ability to copy the formatting of one cell to another.

Aside from Print Preview and sum functions, the most popular feature cited in our informal poll was the ability to have multiple sheets in one file or workbook. "It makes it very easy," Blanck says, "to organize a project and share common data on a project without having to open multiple files."

While it's difficult to pick a bad product, it's easy to pick a bad fit. Microsoft's Williams says the two most common mistakes people make when picking new software are not fully considering what they need to do and what

tools will best help them, and not fully considering the future. "A choice that may be simple today," he says, "might lead to difficulties down the road." Carelessness in the research stage may lock you into a program that doesn't give you the versatility you need.

For example, if you frequently share files with many co-workers, each of whom has something to contribute to a project, you want a program that provides collaboration tools that let people add to files, compare revisions, or download material from another source into the file. In that case, look at 1-2-3, which features Lotus' Team Computing tools. If you do a

**"I'm not sure that with
as sophisticated as
spreadsheets are, you
can make a mistake
when picking one."**

— Paul Blanck, CPA

lot of presentations in *Microsoft PowerPoint*, with text and tables from *Microsoft Word*, and you know spreadsheet information would beef up that presentation, choose Excel for the best integration. *WordPerfect* users should look to *Quattro Pro* for hassle-free compatibility.

When selecting software, price should be a secondary concern. A good buy at the cash register may provide limited functionality at the desktop. Sullivan, Williams, and Corel representatives say integration and compatibility with other programs and their file formats are among the biggest user demands in surveys. Customizability—the ability to adapt a program's functions and interface to your needs—is another must-have feature.

■ **The Works Alternative.** There's an old adage that most people only use 10% of their brain capacity. Equally so, most users only take advantage of about 20% of their software's capabilities. When you figure cost into the equation, many users only use \$70 to \$100 worth of a \$300+ package. Basically, you could be throwing money, and hard drive space, away.

A possible solution? Integrated, or works, software. Office suites are conglomerations of standalone packages that work together to provide extensive integration, power, and growing room (and a high learning curve). Works packages, on the other hand, offer components with basic tools that everyone needs, superb integration between components, and a reduced learning curve. This combination makes works packages an attractive solution for home users, home businesses, and small businesses. Led by Microsoft with its *Microsoft Works* package, the field also includes Novell's *PerfectWorks* and Claris Corp.'s *ClarisWorks*.

According to Tom D'Arezzo, product manager for ClarisWorks, "Works packages don't have the complete feature depth of the bigger packages, but they offer enough for most people to do their work. They're (the users) getting more value because they're not paying for features they don't use."

■ **Take It Seriously.** Whether you pick a standalone spreadsheet or a works package, the first thing to remember is that this decision cannot be made overnight. It probably can't be made in a week—if you want to do things right. You must make a commitment to this project in order to make it turn out right.

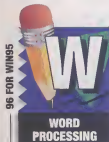
The second thing to consider is that many of the factors you apply to buying software for home use are not necessarily suitable for office use. While you may have a house full of novices, your office might have a dynamic mix of power users and absolute beginners. Talk to your staff. Find out what kind of work they routinely do and what kind of projects they have coming up. Ask them what processes or software tools they would most like to fix (it doesn't matter if they don't know how to fix them). Then take that information and use it as part of your criteria when you start researching packages.

Ultimately, the decision is up to you. Just because a power user or a review in a computer magazine says one program is hands-down better than the others doesn't guarantee the package is what you need. These people based their decisions on factors that may have nothing in common with your own. It's best to remember one simple rule of thumb: It's not what program is better than all the others that counts; it's what program is better than all the others *for your needs* that does. ■

by Whitney Potsus

Word Pro 96

Working With Tabs



96 FOR WIN95

hen looking at lists of information, people prefer to have that information organized in a logical manner. One of the easiest ways to organize bits of data is by separating them into columns. Back in the typewriter's glory days, the best way to set up columns was with tabs. With today's word processors, you still use tabs. But they now do much more than the typewriter's TAB key ever allowed.

Word Pro has several types of tabs, each letting you align text and numbers in different ways. The four types (shown in the photo on this page) include the following:

- Left-aligned, which aligns text on the left side.
- Right-aligned, which aligns text on the right side.
- Centered, which aligns text equally to the left and right of the tab position.
- Numeric, which aligns text by a numeric separator, usually a decimal point.

The type of tab you use depends upon the data you want to align. If you're aligning dollar figures, for example, you'll probably use a numeric tab to line up decimal points.

■ Using The Defaults. If you only use tabs occasionally, you probably don't need to worry much about setting and clearing them. Word Pro comes with tab stops preset for you at half-inch intervals. These tabs are referred to as default tabs.

When you open a new document in Word Pro, you'll see a horizontal ruler running along the top of the document. The default tabs are marked by small red "tick" marks along the top of the ruler. (NOTE: If the ruler doesn't appear in your document window, choose the Show/Hide command from the View pull-down menu. Then choose Ruler. The ruler should now be displayed.)

If you don't like the locations Word Pro has chosen for the default tab stops, you can change them. To do this, right-click anywhere

over the ruler. Choose Set Tabs from the menu that pops up. The Set Tabs On Ruler dialog box will appear. Left-click the Set Defaults button. Specify the division for and distance between the tabs you'd like. Then left-click Set Tabs. The new settings are now displayed on the ruler. Left-click Close to close the Set Tabs On Ruler dialog box.

■ Setting Individual Stops. If you don't want to set default tabs for your documents but want to change tabs in a particular document, you can set individual tabs by using the ruler or the InfoBox.

The Ruler. To set tabs with the ruler, select the paragraphs (or the entire document) for which you want to set tabs. Right-click anywhere over the ruler. Choose Set Tabs. The Set Tabs On Ruler box appears. Choose a left-aligned, right-aligned, centered, or numeric tab in the Tab Type: List box. Note that if you choose Numeric, a new option, Align On:, appears; type the character you want the text aligned by in this box. Choose the location of the tab in the Tab Position Ruler: box. Then left-click the Set Tabs button. Left-click Close.

The InfoBox. To set tabs with the InfoBox, place the insertion point in the document area where you want to set tabs (such as a frame or a column). Right-click and choose the related Properties option. (If you want to place tabs in a frame, choose Frame Properties. If you want to place tabs in a column, choose Column

Properties.) Left-click the Misc. tab. Select where you want the tabs placed in the Tab Settings boxes. For example, you may choose From left edge and 0.25 inches. If you want more detailed tab-setting options (such as tab type), left-click Set Tabs to display the Set Tabs On Ruler dialog box we used earlier.

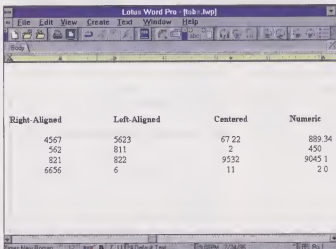
■ Deleting Tabs. You can delete one tab or clear all of them by using the ruler. To delete one tab, simply select the tab stop on the ruler and drag it off the ruler by holding down the left mouse button and moving the pointer. When the tab stop is off the ruler, release the mouse button.

To clear all tabs, right-click anywhere over the ruler. Then choose Clear All Tabs.

If tabs are set "locally" or within a frame or column, you'll need to treat them differently. Place the insertion point in the item from which you want to clear the tabs. Right-click and choose the related Properties option. For example, to clear tabs from a text frame, choose Frame Properties. Left-click the Misc. tab. Then in the Tab Settings list box, select None.

Well-organized text is a must for written reports, literature, and even memos. By taking advantage of Word Pro's tab options, you have more alignment options than typewriter users ever dreamed possible. ■

by L. Johnson



Word Pro has several types of tabs to align text and numbers in different ways. They include right-aligned, left-aligned, centered, and numeric.

Quattro Pro 6.0

Sizing Rows & Columns



ne of the most important aspects of any good spreadsheet is its readability. This is especially true in large spreadsheets where the numbers seem to run into each other. If data

spreads across more than one column, the end result could be a useless group of numbers.

Since the length of your data changes from one cell to another, the size of the cells should change, too. The default size of approximately nine characters (at 10-point character pitch) may not be suitable for all of your information. Being able to adjust the height and width of any cell is nearly as important as the information it holds.

Quattro Pro 6.0 offers several ways to customize spreadsheets to the size of the data. These options let you change column width and row height for the entire spreadsheet, a column (or columns), or a row (or rows). If you don't have the time to spend on designing, you can let Quattro Pro do it for you with either the Fit or Auto Width commands.

■ Setting The Width & Height. First, let's change a column's width and height manually:

1. Open the spreadsheet that needs re-sizing.
2. Select the cells you want to change. To select the whole spreadsheet, bring your cursor to the upper-left corner of the spreadsheet, in the shaded area left of column A. The cursor shape will change to that of two arrows pointing in a 90-degree angle. Click here, and the whole spreadsheet will be highlighted. Selecting a single cell will change the width of the whole column or the height of the whole row.

To select more than one column, click a cell in one column and then drag the cursor across as many columns as you need. For example, if you start on cell C5 and drag to cell G5, all the columns in between will be highlighted—C, D, E, F, and G—forming a "block" of cells.

To select more than one row, click a cell in one row and then drag the cursor up or down as many rows as you need. For example, if you start on cell C5 and drag to cell C10, all of the rows in between will be highlighted—5, 6, 7, 8, 9, and 10—forming a "block" of cells.

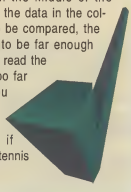
3. If you have selected more than one cell, place your cursor anywhere on the highlighted area and right-click.

4. Select Block Properties.

5. Highlight either Column Width or Row Height.

Although the Fit and Auto Set commands may save time, they also may produce spreadsheets that look out of proportion. If you have data in a specific cell that is significantly longer than all the other cells in the column, automatic column adjustment may make the column too wide for the spreadsheet. Consider revising the cell or redesigning the order of the columns, if possible.

It is much easier to have the last column to the right as the widest instead of a column in the middle of the spreadsheet. If the data in the columns needs to be compared, the columns need to be far enough away to clearly read the data, but not too far apart that you have to move your head back and forth as if you were at a tennis match. □



6. Select Set Width or Set Height, depending upon which attribute you're changing. Select the units in which you want to work: characters for column width, points for row height, inches, or centimeters. Enter the new setting. Click OK.

Another option is to click and drag to change the size of the column or row. To do this, simply place the cursor to the top right of the column you want to change (near the letter

in the shaded area) or to the bottom left of the row (near the number in the shaded area). The cursor will change to an arrow pointing in opposite directions and will turn black. Click and drag the cursor to increase or decrease the size of the column or row.

■ Let The Data Dictate. Quattro Pro offers two options, Fit and Auto Width, for letting the spreadsheet self-adjust, but they must both be executed after the data is entered. Here is the first option:

1. Open a spreadsheet.
2. Select the columns you want to change, using the directions above.
3. Click the Fit button (a square with a double-sided arrow inside) on the button bar.

Instantly, each column you highlighted will be adjusted to fit the longest data. If you want more space at the end of your data so that it doesn't seem to run into the information in the next column's cell, use the Auto Width command as follows:

1. After you have selected the columns you want to change, place your cursor anywhere in the highlighted area.
2. Right-click and select Block Properties.
3. Select Column Width.
4. Select Auto Width. This will prompt you to enter a number under Extra Characters. (NOTE: Changing the units does not have any affect here.) The number of Extra Characters will be added to the length of the longest data in that column and will set the column to this new width.

Quattro Pro's sizing feature lets you have greater control over the final presentation. Whether you predetermine the size of a column or make the column width fit to the data, you will ultimately wind up with an easy-to-read spreadsheet. ■

by Ellen DePasquale

Quicken Deluxe 5.0

Balancing The Checkbook Register

5.0 FOR WIN



Remember when you used to ask your math teachers why you had to learn math, and they just smiled and said you'd need it someday? Now, as you're pulling your hair out trying to understand how you added your monthly expenses three times and came up with three different answers, you'd swear you can hear those math teachers laughing at you from classrooms in the great beyond.

With *Quicken Deluxe 5.0*, balancing your checkbook and matching it to your monthly bank statement require no math on your part and are relatively simple processes. We'll show you how to make Quicken do the math for you.

■ Reconciling The Difference. Open the account you want to balance (usually your checking account) by clicking the Register icon at the HomeBase window. Make sure all of the checks you've written and deposits you've made are entered into the account register.

Now click the Activities menu and select the Reconcile command. From the printed account statement your bank mailed to you, type the statement's opening and ending balances in the appropriate boxes in the Reconcile Bank Statement dialog box. You also can click the calculator button to the right of the box and enter the numbers using the Quicken calculator.

If your bank places a service charge or pays you interest on your account, enter the amounts in the Service Charge or Interest Earned boxes. Be certain to select the date of the transactions and the appropriate category listings so Quicken can properly track the transactions.

After clicking the OK button, you'll move to the next dialog box. On the left side, you'll see the Payments And Checks section, listing all of the

uncleared expenses you've entered into your account register; on the right side is the Deposits section, listing uncleared deposits. Underneath each section, Quicken totals the transactions that have cleared. At the bottom of the overall window, Quicken shows the difference between the balance on your bank statement and the balance in your account register.

Using your bank statement, match each transaction that has cleared with its entry in your Quicken checking register. In the Payments And Checks section, cash and electronic transactions are listed first (sorted by date) followed by checks (sorted by check number). If you'd rather have all transactions sorted by date, regardless of the type of transaction, click the Sort By Date box in the lower left of the window.

To mark a transaction as cleared, click it. Cleared transactions are designated by bold type and a yellow check mark. If you want to change a transaction back to uncleared, click it again. Never double-click, though, because Quicken takes you back to the checkbook register window. If this annoying feature happens to you (and it probably will), simply click the Reconcile button along the left side of the Quicken window to return to the Reconcile Bank Statement window. You won't lose any of your work.

As you mark transactions as cleared, Quicken updates the totals throughout the window. You might find one or several transactions on your bank statement that you forgot to enter into Quicken. Just click the New button at the top of the window, record the forgotten transactions into your account register, and click the Reconcile button on the left side of the window to return to the Reconcile Bank Statement window.

When you've marked all of the transactions on your bank statement, click the Finished button. If you've correctly matched the bank statement and your account, Quicken will deliver a well-deserved celebratory message.

■ If You Didn't Balance? If the Difference line at the bottom right of the Reconcile window contains a number other than zero, Quicken will take you to the Adjust Balance dialog box. Quicken creates a miscellaneous balance adjustment in your checkbook register to account for the difference if you click the Adjust button. We suggest you click Cancel (especially if the difference is large), return to Reconcile window, and double-check all of the figures you've entered against your bank statement. If you still can't find the difference, use

the Adjust Balance option. You also may want to contact your bank; it may have made a mistake. If you must make a balance adjustment, Quicken won't reward you with the congratulatory message.

After you've balanced the account, Quicken asks if you want to print a reconciliation report. Because you already have a printed statement from your bank, this report really isn't necessary. If you want to take a closer look at your spending habits for the month, Quicken has other report features that are more helpful. Quicken eventually returns you to the account register window. All of the cleared transactions are marked with a capital R (for reconciled) in the Clr column. ■



With this message, *Quicken* helps you celebrate the completion of the tedious task of balancing your checkbook.

by Kyle Schurman

HIGH PERFORMANCE RUNS IN THE FAMILY.



maxell

For over 25 years, the Maxell name has stood for high performance and solid reliability. Our dedication to superior quality has enabled us to create a full line of data storage products that meet a wide range of user requirements. Adding to our already extensive line of floppy disks, computer tape products and optical disks, we're proud to introduce the newest members of our family: CD-R Optical Disks, Second Generation 1.3 GB Optical Disks, the 4 GB HS-4/120 4MM Tape, and a complete line of computer accessories. Innovative thinking from Maxell. We keep it in the family.

Microsoft Excel 5.0

Using Page Setup



Imagine that you've created a brilliant Microsoft Excel worksheet for a meeting, only to have trouble getting it to print exactly as you planned. What you may not have realized is that Excel contains options to create striking printed copies by changing your document layout. In last month's Quick Study, you learned about the basics of printing. Now we'll show you tips and tricks for changing orientation, scaling, adding custom headers and footers, and using print titles.

The best way to change worksheet layout is to use Page Setup. To display the Page Setup dialog box, choose Page Setup from the File menu (File, Page Setup). And, since this command is closely linked with printing, you can access Page Setup directly from both the Print Preview window and the Print dialog box.

■ Making The Changes.

Excel lets you print the selected range in either Portrait or Landscape orientation. Because of the way worksheets are laid out, most will print better in Landscape. In the Page Setup dialog box, click the Page tab. Choose either Portrait or Landscape in the Orientation section.

Excel also provides a way to change the printed worksheet's size by a specified percentage—much in the same way you can enlarge or reduce on many copy machines. You can scale a worksheet to a specific percentage of the "normal" size by using the Scaling section. You can reduce the sheet to 10% or enlarge it to 400% of the normal size. First, select the sheet or sheets that you want to scale, then choose the Page tab from the Page Setup dialog box. In the Scaling section, enter the percentage you want in the Adjust To box.

You can easily change the margins of an Excel worksheet in the Page Setup dialog box by clicking the Margins tab and typing the new margins in the text boxes provided.

Sometimes, you may want to center the worksheet rather than set specific margins. Use the Center On Page check boxes for centering the page either vertically, horizontally, or both.

■ Creating Headers & Footers.

Headers and footers are simply descriptive text that prints at the top and bottom of every page in your worksheet. They're handy for including items such as the date, time, or

can type text, such as a department name, in the Left, Center, and Right sections. The text box area you choose dictates the text's location on a printed page. And, if you want to spice up the text's appearance, you can select it, then click the Font button (which has a capital A on it) to choose other typefaces.

You'll notice the row of buttons in the middle of the Header dialog box. Click these to automatically insert elements such as the date, time, page number, file, or tab name. When you're finished creating the header, choose OK to return to the Page Setup dialog box.

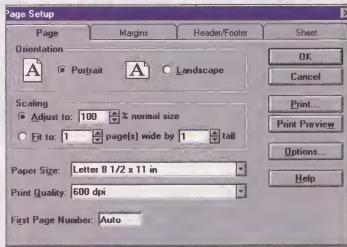
You also can revise a previously made header by selecting it from the list and clicking the Custom Header button. In the Header dialog box, make your revisions and choose OK. Footers are created and edited using the same procedure; just choose Custom Footer instead of Custom Header.

■ **Printing Titles.** Finally, you'll often want the descriptive titles in the first column or row repeated on each printed page. For example, you may have an inventory list that extends for hundreds of rows. Most likely,

you want the row that describes the data to appear on top of each printed page. In the Page Setup dialog box, choose the Sheet tab. Use the Print Titles section to enter the cell reference for the row or column you want repeated.

By using the features in the Page Setup dialog box, you have the tools to print worksheets that are as attractive and readable as they are informative—and could be well on your way to a new promotion! ■

by Linda Bird



You can change a worksheet's layout by using the Page Setup dialog box.

page numbers. You also can include text such as your company name or the name of the report. Once created, the header or footer is added to the list of built-in headers or footers.

To add a header or footer to your printed worksheet, click the Header/Footer tab in the Page Setup dialog box. You can choose a previously created header or footer from the Header or Footer drop-down lists. The preview area shows how the chosen header or footer will appear when printed.

If you don't find the header or footer you want on the list, you can customize your own. To do this, click the Custom Header button to display the Header dialog box. You

- ◆ David L. Rogers;
Anchorage, AK
- ◆ James L. Arimond;
Milwaukee, WI
- ◆ Patricia Faulhaber;
North Canton, OH

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Personal Message:

We also chose 10 random entries which will receive an **Internet Guide Series** issue. We would like to share some of their comments with you as well. Here they are:

Judee Goldstein, a bookkeeper from Netanya, Israel writes: "Subscribing to PC Novice was a natural step after absorbing everything in that first issue I purchased off newsstand. I talked to me at my level. No condescension and no implied criticism. Cries for rescue steadily evaporated thanks to PC Novice."

J. Anthony Massarella, a UNIX Professional from Halstead, PA says:

Within the last 18 months, I have used the information found only in *PC Novice* to upgrade CPU motherboards, video cards, hard disk and modem subsystems with an almost effortless ease. Without *PC Novice*, I'm certain that these tasks would have proved far more difficult and a much less palatable adventure."

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3) doesn't JUST claim to be written in plain English? We even include a Glossary Of Terms in every issue.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4) provides information for computing in your home AND office? For example: Windows & DOS Computing, Family Computing, At The Office, and Plugged In, just to name a few monthly departments.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

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Are you looking for a computer magazine that:

1) dedicates a majority of it's pages to editorial rather than advertising? ☐ Yes ☐ No

2) doesn't JUST CLAIM to be written in plain English? We even include a Glossary Of Terms in every issue. ☐ Yes ☐ No

3) provides information for computing in your home AND office? For example: Windows & DOS Computing, Family Computing, At The Office, and Plugged In, just to name a few monthly departments. ☐ Yes ☐ No

If you answer "yes" to any of the questions above, please fill out the information below and try *PC Novice RISK-FREE!*

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LINCOLN, NE 68501-9807**Elaine M. Rea, a Massage Therapist from Chula Vista, CA writes:**

"A teacher, more years ago than I care to think, gave an excellent piece of advice: Knowledge is knowing where to find what you want when you want it. *PC Novice* fills the bill. A couple of months ago I was asked by my Computer User Group to do a presentation about desktop publishing. I was a little worried. I took a class in it but how to explain it? No worries! *PC Novice* ran a complete explanation in the May '96 issue!"

Glenda Weddle, an Elementary School Teacher from Emory, TX says:

"I would recommend *PC Novice* to any beginning, intermediate or advanced computer user, because whatever your current level of computer skills and knowledge, there is something useful and interesting waiting for you in each and every issue of *PC Novice*. My final recommendation is: Never throw an issue away! I've gone back time and time again to previous issues. Although I read each issue as it is received, I'm not always ready to try everything out. *PC Novice* makes a terrific reference library!"

Here are the other six winners of the Internet Guide-To Issue:

- Dottie Nelson from Davenport, IA
- Maxwell K. Schneider from Mount Holly, VT
- James Chubinsky from Langweid, Germany
- Leo J. Neifer from Roscoe, SD
- Bunnell D. Lund from Lancaster, CA
- Lupe Ruiz-Flores from San Antonio, TX



Lotus 1-2-3 4.0 For DOS

Enhancing Graph Displays

4.0 FOR DOS



SPREADSHEETS

he visual nature of graphs lets them convey messages about your numbers more quickly than numbers can alone. Lotus 1-2-3 for DOS contains many options for enhancing

your graphs, such as adding titles and legends, or for changing the appearance of parts of the graph, such as using a three-dimensional (3-D) effect on bars.

A graph can be modified by using options from the Graph Setting dialog box, which can be accessed by selecting Graph from the menu bar. (You also can make the changes by using Graph, Options and Graph, Type, Features on the menu bar.) To change a named graph, make it current by selecting Graph, Name, Use and entering the graph's name. After making your enhancements, use Graph, Name, Create and specify the name you used earlier.

■ Annotating A Graph. Annotations on a graph, such as titles and legends, help explain to the viewer what the data signifies. Without them, the graph is confusing and often meaningless.

To add titles, enter the Graph Settings dialog box and press F2 or click the box to activate it. Click the Titles button. Select the type of title to use (First, Second, X-axis, Y-axis, 2Y-axis), enter the text, and press OK. If you want to use text from a worksheet cell, type a \ (backslash) followed by the address or name of the cell. To add a footnote to the graph, select Note 1 or Note 2 and enter the text or cell specification. Graph footnotes appear in the lower-left corner of a graph.

After making any changes in the Graph Settings dialog box, click View to view the graph

and press any key to return to the dialog box. When you are done with the dialog box, click OK to accept the entries. Select Quit to return to 1-2-3 and the READY mode.

To add legends and data labels to a graph, activate the Graph Settings dialog box. Select Options to display the Graph Options dialog box.

To add a legend for the A-F data ranges, select the data range and then select Legend. Enter the legend text, or a \ (backslash) followed by the cell address containing the text to use, and press ENTER.

Data labels can be applied to bar, line, XY, mixed, or HCLQ graphs. First select the data range and then select Data Label. (For pie charts, select data range X.) Enter the address or range name that contains the data labels and press ENTER. Choose Alignment next to specify the placement of the data labels: Center, Left, Above, Right, or Below.

The Graph Options dialog box contains several other options to enhance your graph display. Use the Text Attributes box to change the color, font, and size of text in a graph. Select First Group to modify the first title; Second Group to modify the second title, the axis titles, and the legend text; and Third Group to change scale indicators, axis labels, data labels, and footnotes.

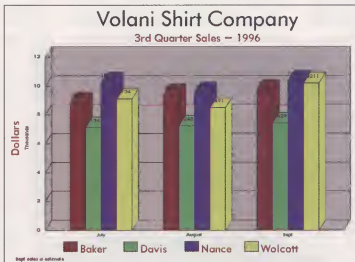
In the Data Range Settings box, select a data range to modify and then choose Color to set the color or Hatch to fill bars or pie slices with a hatch design. Select Line Style to change lines in a graph to solid, dashed, or dotted lines. The Symbol option lets you use different symbols in a line graph, such as filled-in diamonds or squares or a hollow triangle.

■ Other Options. A 3-D effect can be added to lines, bars, and pie slices in any type of graph except for HCLQ. To define the 3-D effect, activate the Graph Settings dialog box. Select a data range and then mark or unmark the 3D Ranges check box to set or remove the 3-D effect for that data range. You also can use Drop Shadow to add a drop shadow to bars, giving them a 3-D effect.

Graphs in 1-2-3 are displayed vertically by default, with the Y-axis appearing on the left side of the graph frame. To rotate the graph so it displays horizontally, select Orientation Horizontal from the Graph Settings dialog box. To return to a vertical display, choose Orientation Vertical. Not all graphs display well in horizontal orientation, so be sure to view your graph before proceeding any further.

The addition of grid lines helps show where data points fall on a graph. Grid lines can be displayed from the X-axis, Y-axis, second Y-axis, or all axes. To use Grid lines, activate the Graph Settings dialog box and mark the check boxes for Grid Lines Vertical and Grid Lines Horizontal. The default for horizontal grid lines is to originate from the Y-axis, but you can change that to the second Y-axis or originate from both. ■

by Diane Kaye Wolkowiak



Even in Lotus For DOS, you can add titles, legends, three-dimensional effects, and colors to enhance your graphs.

PageMaker 6.01

Using Keystroke Shortcuts

6.01 FOR WINDOWS



he mathematical statement that "the shortest route from point A to point B is a straight line drawn between them" also holds true for optimizing PageMaker 6.01 performance. PageMaker's graphical interface sports pull-down menus with commands for program functions. It also features a variety of movable palette windows outfitted with convenient button tools or formatting options that you can apply without ever opening a dialog box. The best way to access program functions, however, is often via keystroke shortcuts.

These shortcuts are those cryptic commands that appear in menus such as ^N (read as CTRL-N) to Open a new PageMaker document or Sh^X (read SHIFT-CTRL-X) to set type width to normal size. PageMaker beginners appreciate how clicking the mouse on a pull-down menu command or palette item lets them access commands without having to learn any nonintuitive keystrokes. Experienced PageMaker users, on the other hand, know that applying keystroke shortcuts (such as F9 to cycle between the Pointer tool and a previously selected tool in the Toolbox palette or SHIFT-F5 to select the Toolbox palette Line tool) speeds up page layout and design activity, and also improves productivity. With shortcuts, you don't have to point, click, or drag the mouse around the desktop.

■ The Long And Short Of It.

PageMaker comes with a printed Quick Reference Card, featuring six pages of the program's keystroke shortcuts. It's a convenient reference to have on hand, but the card is easy to lose. Fortunately, there is also a Shortcuts function in the PageMaker Help menu. Pointing and left-clicking this option (ironically, with no keystroke equivalent) brings up a screen with click-on

access to an annotated list of keyboard shortcuts grouped by category.

For example, left-click the Layout button at the bottom of the About Screen to acquaint yourself with keystroke shortcuts for functions such as Rulers on/off (CTRL-R) or Proportional Stretch for a placed graphic (SHIFT-drag handle). Similarly, left-click the View button to reveal keystroke shortcuts for commands related to the display of the layout window.

Some commands, such as CTRL-5 (which directs PageMaker to shrink the publication display to 50% size), have pull-down menu equivalents. This means that if you forget the shortcut, you can access the command from its menu. Other commands, such as SHIFT-File, Close (which tells PageMaker to close all open publications), are unavailable from a pull-down menu. Some commands, such as Show Entire Pasteboard (SHIFT-CTRL-W), are accessible from pull-down menus, but the menu items don't always display the associated keystroke shortcut. Checking the Help menu is a sure-fire way to check keystroke equivalents.

You may know that pressing CTRL- (single quote key) toggles between displaying/hiding the Control palette. Do you also know that pressing CTRL- (above TAB key) while the Control palette is on-screen toggles between this palette and the active publication window? For a printed copy of any keystroke shortcut Help screen menu, display the menu

on-screen, then press CTRL-P to output the screen to the printer.

■ **Text Editing.** It takes time to master all PageMaker shortcuts. Your best bet is to be selective. For example, why bother to learn the keystroke for creating an index entry (highlight text, then press CTRL-) if you intend to produce only short publications?

Similarly, why memorize the keystroke shortcut for moderate compression to a TIFF graphic (i.e., press CTRL-ALT-OK before clicking Open in the File, Place dialog box, then keep these keys held down for at least a couple of seconds) if you work only with Encapsulated PostScript images? In short, some commands may be irrelevant for your work. On the other hand, keystroke equivalents for commands that help you manipulate text or format paragraphs are sure to prove useful.

For example, to kern a range of text so that there is less space between characters, you could highlight the text, choose Expert Kerning (Type menu), then move the dialog box slider bar in the "tighter" direction. Or, for faster, more precise control over the kerning process, highlight the characters you want to bring closer together, then press CTRL-SHIFT-minus key on the numeric keypad. This keystroke combination kerns characters .01 em (a publishing measurement) closer together. To kern them together as much as .04 em, press CTRL-minus on the number pad. Substitute the plus on the numeric pad for the minus to kern characters apart.

Other nifty keyboard shortcuts for text editing include: em dash (CTRL-SHIFT-); nonbreaking hyphen (CTRL-SHIFT-minus key); and new line or soft return (SHIFT-ENTER). To set up paragraph indents and tab stops by clicking and dragging formatting symbols on a ruler, press CTRL-I. This brings up the Indents/Tabs dialog box and gives you easy paragraph formatting options. ■

by Carol S. Holtzberg, Ph.D.



Choose Shortcuts from PageMaker's Help menu to bring up a screen with click-on access to all keyboard shortcuts.

Microsoft PowerPoint 7.0

Using Outline View



PRESENTATIONS

which displays your presentation's content in classic outline form. Using this view, you can efficiently add, delete, or rearrange text. It also affords you an overview of several slides' content at once. If you're an organized person (or aspire to be), you'll appreciate the Outline view.

The easiest way to switch to this view is to left-click the Outline View button located above the status bar in the lower-left corner of the screen. Alternately, you can choose Outline from the View menu (View, Outline). In Outline View, only slide titles and body text are displayed; graphic elements, such as graphs and clip art, are not shown. Each slide title appears next to a slide number and slide icon. Body text appears below the title and can be indented up to five levels.

You'll also note the Outlining toolbar, which displays to the left of the workspace. If you rest the mouse pointer momentarily over each of these toolbar buttons (or any PowerPoint button), a ToolTip pops up indicating each one's function.

■ Working With Text.

You can use the Outline View to create a new presentation or to revise text in an existing one. To make a presentation from scratch in outline form, create a new presentation, then switch to Outline View. Type a title for the first slide and press ENTER. A second slide is created. Rather than using this second slide, you can easily create a series of bulleted points related to the first slide. Left-click the Demote button (an arrow pointing right) on the Outlining toolbar to indent the text

for the line your insertion point is on. If you prefer to indent using the keyboard, press TAB. Press ENTER at the end of each bulleted point to create a new bullet at the same outline level. Whenever you want to move text up an outline level, left-click the Promote button (arrow pointing left) or press SHIFT-TAB. When you finish creating your bulleted points, you'll probably want to start a new slide. The easiest way to do this is to press CTRL-ENTER.

If you have an existing presentation, you can enter, edit, promote, and demote text in the same way. You can make corrections by using the BACKSPACE and DELETE keys. You also can delete a slide or bulleted point by selecting its icon, then pressing DELETE.

■ Rearranging Your Outline.

In Outline View, you can quickly rearrange bulleted points or even entire slides. Select the slide or bulleted point by left-clicking its icon. When you select a slide, you select all the bulleted points it includes. You also can select several points by left-clicking the first, pressing SHIFT, then left-clicking the last one. Once an item is selected, you can drag the point or slide to a new location indicated by the solid black line.

Rearrange text by selecting the point or slide, then left-clicking the Move Up or Move Down buttons on the Outlining toolbar.

Another useful feature is collapsing or expanding outlines. You can collapse the outline's display to show just titles or expand it to show all bulleted points. To display just a slide's title, left-click the slide, then choose the Collapse Selection button (indicated by a minus sign). You can redisplay the bulleted points by left-clicking the Expand Selection button (indicated by a plus sign).

To quickly expand or collapse your entire presentation, use the Show Titles and Show All buttons near the bottom of the Outlining toolbar.

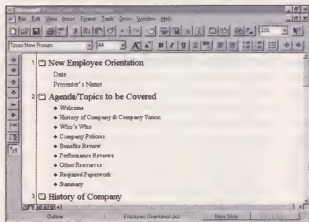
■ **Printing.** Because your outline prints just as it appears on-screen, you should change the display before actually printing. For example, you may want to print just the titles to distribute as an agenda at an upcoming meeting. To print just the titles, left-click the Show Titles button. To print all levels of text, choose the Show All button. You also can hide the outline's formatting by deselecting the Show Formatting button.

Another useful idea is to add header and footer information to your printed outline. For example, you might want to include your company's name, the date, or page numbers. Press SHIFT while left-clicking the Outline View button to display the Handout Master. Left-click in the header or footer area, then type the text you want. To insert the date or page number, left-click in the header or footer area, then choose Insert, Date And Time or Insert, Page Number.

Once you're satisfied with your outline's layout, you can print it by left-clicking the Print button or choosing File, Print.

After you've discovered how easy it is to work with text in Outline View, you'll amaze your co-workers with your ability to quickly manipulate presentation content in time for the next big meeting. ■

by Linda Bird



Having trouble organizing a presentation? Try rearranging and editing its content in Outline View.

Microsoft Word 7.0

Creating Web Pages With Internet Word Assistant



ith Internet Assistant for Word (bundled free with Microsoft Word for Windows 95 7.0a or available from the Microsoft World Wide Web page at <http://www.microsoft.com>),

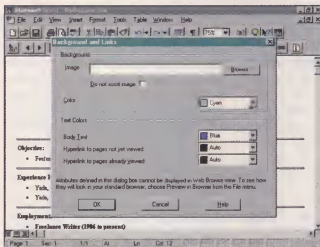
even Web publishing beginners can quickly learn to post HTML-formatted pages on the Web. (Hypertext Markup Language is the code used to create Web documents.) Internet Assistant, though not as powerful as true HTML editors, is a great place to start because it automatically converts documents you create in Word to HTML format.

■ **Seek Employment Online.** This tutorial helps you prepare a simple, all-text résumé using Internet Assistant.

1. Launch Word.
2. Choose New from the File menu (File, New).
3. Left-click the General tab, then double left-click the Html.dot icon to bring up the HTML authoring template that's bundled free with Internet Assistant. (NOTE: Don't left-click the New button on the Word Standard toolbar. It uses Normal.dot for its document template, and you'll have to work harder to get it into HTML shape.)
4. Make sure that Word's Standard and Formatting toolbars are visible. If they aren't, select View, Toolbars, check the boxes next to Standard and Formatting, then left-click OK.

Compose your résumé in Word like this:

1. Left-click the Center align button on Word's Formatting toolbar.
2. Type your name, street address, city/state/ZIP code, phone/fax numbers, and E-mail address—each on its own line.
3. Enter all text in the "default" font (typically displayed in your Web browser, which is software such as Netscape Navigator that's used to view Web pages). Highlight your name, left-click the bold button (a large B) on the Formatting toolbar, then left-click the Increase Font Size button three times to enlarge the type. Your name's actual point size depends on how the Web browser interprets the HTML tag.



To change the Background and Text colors in your résumé, choose Background and Links (found in the Format menu), using your favorite colors for Background and Body text.

4. Use Internet Assistant's default font size for all other text.
5. Left-click the Horizontal Rule button on Word's Formatting toolbar to separate sections.
6. Other sections to include in this résumé: Objective, Experience Highlights, Employment, and Education.
7. Use Bold text, Normal, P style, and left alignment for section titles. Normal, P is available from the Style drop-down menu on the Word Formatting toolbar.
8. Format each section's contents in List Bullet, UL style (available from the Style drop-down menu), or left-click the bulleted list button on the Formatting toolbar.

Long text entries in bullet lists wrap automatically, so that text spilling onto a second or subsequent line aligns neatly with the first character in the first line of bulleted text.

To align characters manually (so a second line automatically lines up with the first character in the line above it), type the first line, then press SHIFT-ENTER. This inserts a "soft" carriage return. It's the only way to get an "indented" second line because Internet Assistant doesn't support indented paragraphs or tabs.

9. Highlight only Employment experience and Education degrees in bold.

When your résumé is complete:

1. Choose File, Save As.
2. Select HTML Document (*.htm) from the Save As type box.

3. Make sure your file name has the extension .htm (such as Resume.htm).

4. Left-click OK.

Choose File, Preview in Browser to launch your Web browser and display the active HTML document (such as Resume.htm) as a local file. Alternatively, select Internet Assistant's Switch To Web Browse View button from the Formatting menu or choose View, Web Browse. Remember that Web Browse only approximates how Resume.htm will look on the Web. It's better to view it with your real browser.

■ **Adding Color.** After previewing an Internet Assistant HTML document with your browser, switch back to Assistant to make changes, resave the edited document in Word, then return to the browser to see how your changes look simply by left-clicking the Browser button in the Word Standard toolbar. To ensure that you're examining the latest version of your HTML document, use the browser's reload or refresh commands.

To change the background and text colors in your résumé, select Format, Background and Links and choose your favorite colors for Background and Body text. Be sure to preview these changes in your Web browser because attributes defined in Internet Assistant's Background and Links dialog box don't display in Web Browse view. ■

by Carol S. Holzberg, Ph.D.

WordPerfect 5.1 For DOS

Graphics Options

5.1 FOR DOS



lain text just doesn't compete with today's flashy publications, but many *WordPerfect* users are equipped to face the challenge. This word processor offers many capabilities found in desktop publishing packages. The Graphics feature, for example, lets you combine images and text in documents.

■ **Creating A Graphic Box.** Begin by selecting Graphics from the menu bar. Then select a box type from the Graphics menu:

Figure—Holds images and pictures.

Table Box—Holds WordPerfect tables.

Text Box—Draws special attention to text.

User Box—A miscellaneous box used when you can't place an image in any other kind of box.

Equation Box—Holds equations.

After selecting the box type, select Create to display nine fields of information used to define your graphics box:

1. Filename

If you are importing a graphics image, enter its file name. If you are unsure of the file name, list the files with F5.

2. Contents

There are four types you can choose: graphic, graphic on disk (saved in a separate file), text, and equation.

3. Caption

This lets you attach a heading below or above a graphic. Enter the text and apply any styles, such as bold or italic.

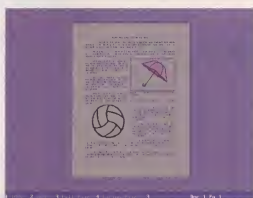
4. Anchor Type

This defines how the graphic is anchored on the page. It can be considered part of a paragraph, fixed on a page, or treated as a character in a line.

5. Vertical Position

6. Horizontal Position

The positioning options vary depending upon the type of anchor. They define where the graphic box will be placed in the paragraph, page, or line.



The Graphics menu lets you add several types of boxes to documents and configure them for the proper look.

7. Size

This is where you define the height and width of the box. Accept the automatic size or change the height, the width, or both.

8. Wrap Text Around Box

Indicate whether the document text should wrap around the graphic box.

9. Edit

This lets you view and edit your graphic by moving it horizontally or vertically, scaling the X-axis and Y-axis, rotating by degrees, creating a mirror image, inverting colors, and displaying in black and white.

When you return to your document, a FIG 1 and box outline appear in your document. The full box outline may not be displayed until you move the cursor down through the document. To view your graphic along with the document, you must view or print the document.

■ **Editing Techniques.** Once you've created your graphic, you can make changes by selecting Graphics, the type of box, and Edit. You'll be prompted to enter the Figure number corresponding to the one you want to edit. The definitions screen for that figure will be redisplayed, allowing you to make your changes.

Other options let you enhance the graphic by specifying a new type of border, changing the caption location, and adding gray shading. Select Graphics, pick the type of box to edit, and select Options. When you change a default

option on the options screen, a code will be inserted at the cursor location. All boxes of that type that follow the code will reflect the change.

The Border Style option lets you change the appearance of each side of the box's border. You can select from choices such as single, dashed, or double lines or choose None to get rid of a visible border line. The Outside Border Space lets you define the amount of space between text and the box' outer borders. The Inside Border Space lets you define the space between the border of the box and the text or image inside.

The First and Second Level Numbering Methods let you select two levels of numbering for the captions. You can turn the numbering off or choose numbers, letters, or Roman numerals. Change the style appearance of caption numbers, such as using italics, by using Caption Number Style and entering style codes. Define the position of the caption by choosing Position Of Caption and placing the caption above or below the box and inside or outside the border.

When WordPerfect finds that a page break will cut a paragraph-anchored graphic box in half, it moves the box up into the top of the paragraph. If you want to control how far up it will move the box, enter a position in the Minimum Offset From Paragraph field.

You can determine the amount of gray shading for a graphic box by selecting Gray Shading and entering a percentage for the shading. Black is 100%, and white is 0%. For most text and graphics to be visible, a shading of less than 20% is needed.

Using graphic boxes within your documents adds life to text and is particularly useful for newsletters. When making changes to any boxes you have inserted into your document, remember to use Reveal Codes to ensure your cursor is at the right location before making modifications. ■

by Diane Kaye Walkowiak

Learn The Language Of The Web:

HTML, Part II

If you're ready to translate your ideas to the World Wide Web, you've come to the right spot. Last month, you learned the basic tags and created your first set of Web documents: a template and a test page. You learned to move around and among Web pages by creating internal and external links. Let's build on those skills and start a home page.

This month, you'll modify standard HTML tags to add distinctive headlines, color, and other elements to a Web page. You'll also see how to use HTML list tags for building tables of contents. Finally, you'll learn to speak with pictures—by adding images to your page.

As we specified last month, we're using Windows' built-in Notepad program to create Web pages, and we're using the *Netscape Navigator* Web browser to view them. First, we'll describe and illustrate a new technique; then we'll show you how to incorporate it into your own home page.

Let's start the home page using the template file you created last month. Open Notepad (in the Windows Accessories group), choose Open from the File menu (File, Open), and locate Template.htm. (If you don't see the .htm files, set the List File Of Type box to All Files.) Open Template.htm. Then go to File, Save As and start a new file by saving this file with the new name of Myhome.htm. It will be your first home page. Make sure the text-only format is selected and that you're saving to the WEB-FILES directory. Click Save.

The Align Command. You know how to create headlines using the `<Hn></Hn>` tags (where *n* stands for headline size). The browser displays headline text in bold text, aligned on the left-hand margin. But what if you decide you'd like to center- or right-align

a headline? It's easy. Use the `ALIGN` command in the headline tags, like so:

```
<H2 ALIGN=CENTER> A Centered  
Headline</H2>
```

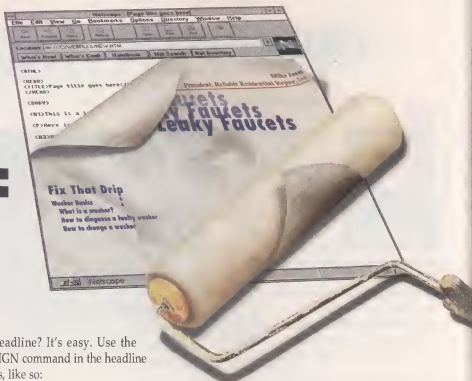
Similarly, use `ALIGN=RIGHT` to place the headline along the right-hand margin, like this:

```
<H2 ALIGN=RIGHT>A Right-Aligned  
Headline</H2>
```

Turn now to the home page you've begun in Notepad. It's time to express yourself! Create a centered headline for the page using the technique described above. As our example, we're creating a home page for Mike Jones and his part-time handyman business.

In addition to aligning headings, you can align whole chunks of text using `ALIGN` with the paragraph, or `<P>`, tag. You may recall that the `<P>` tag—placed at the beginning of a paragraph—doesn't require a corresponding closing tag. But by using the "opening" paragraph tag with a "closing" tag (`<P></P>`), you can center or right-justify a block of text. For example, you could try the following:

```
<P ALIGN=RIGHT>  
<B>Mike Jones</B>  
President, Reliable Residential Repair  
Inc.</B>  
</P>
```



This block, when placed in the upper right-hand corner, could work as an identifying header for a set of Web pages. Using this text with centered headline, you have the beginnings of a home page. See how Netscape views it in Figure 1 on the next page.

Netscape extensions. An alternative method for centering elements on a Web page is the `<CENTER></CENTER>` tag. It is a Netscape extension, which means the code was first supported by the Netscape browser, making it a kind of Netscape-specific HTML slang. Because `<CENTER>` is not part of the authoritative HTML specification, many HTML experts disparage its use. Regardless of the initial controversy over the `<CENTER>` tag, it's now part of (most) current browsers' vocabularies and therefore safe to use.

Keep in mind, however, that even if a tag is part of the official HTML specifications, it is still hard to know which browsers support, or understand, it. Using unsupported tags defeats the purpose of HTML as a universal Web language. To learn more about HTML specifications, see "HTML With Style" on the following page.

Horizontal rules. Another standard tag you can alter for special effects is the horizontal rule, or `<HR>` tag. By default, browsers center it on a page. But not only can you use the `ALIGN` command to place it on the page, you can use `WIDTH` and `SIZE` commands to specify its page width and height.

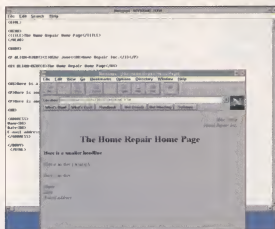


Figure 1. Use the **ALIGN** command to center headlines and control blocks of text.

The **WIDTH** command instructs the browser to display the horizontal rule as either a percentage of the page width or as a specific number of pixels wide. (Pixels are tiny dots in a computer screen that contain color and brightness information.) So if you type

```
<HR WIDTH=75%>
```

the line will extend three-quarters of the way across the page. But if you omit the percentage sign, like this:

```
<HR WIDTH=75>
```

then the line will stretch a mere 75 pixels across the page. A standard page width is 600 pixels.

The **SIZE** command tells the browser how "fat" to make the horizontal rule, in increments of pixels. So if you type `<HR SIZE=5>`, the browser will add an extra five pixels to the line—on the vertical plane. With `<HR>`, you can use all three commands: **ALIGN**, **WIDTH**, and **SIZE**. Just keep in mind that subtlety in Web page design is an internationally recognized virtue.

With `Myhome.htm`, use one of the tricks described above to modify the horizontal rule at the bottom of the page.

■ **Background Color.** One final way to jazz up Web pages using standard HTML tags is to place background color information in the `<BODY>` tag. You do this in one of two ways: by using a small image file or by using a special color code.

Background images. To use an image for background color, include its file name in the opening `<BODY>` tag, like this:

```
<BODY BACKGROUND="red.gif">
```

The image should be very small, perhaps five pixels by five pixels. It will tile (or repeat itself) throughout the page, producing a colored background. Beginners should be sure to place the image in the same directory as the HTML file.

You've probably seen Web pages with interesting designs as backgrounds, too. These effects, called background "textures," also are achieved with a single image placed in the `<BODY>` tag. Textures are trickier to use, however, because they can leave distinct outline patterns as

they tile—definitely a tacky look.

Where do you get colors and textures? Unless you have access to a paint program and can create them yourself, you will have to find them on the Web. Many Web sites are dedicated to collecting background colors and textures. For more information, see the sidebar "Pictures Tell The Story."

Background codes. The other method for creating a colored background is to use a hexadecimal color code in the `<BODY>` tag. In the context of computer colors, "hex" codes are numbers and letters that stand for different values of red, green, and blue. For instance,

```
<BODY BGCOLOR=#FFFFFF>
```

tells the browser to present a white background. The code `"#000000"` produces a black background. And there are codes for many colors in between. (The "Pictures Tell The Story" sidebar has several Web sites offering keys to the hex code.) There's no tiling with this method, and you can't use hex codes for a textured effect.

As technology improves, more and more browsers are coming to understand color names, such as "white" or "navy," as well as hexadecimal codes. Check with authoritative Web sites to learn the standard color names in English.

Caveats with color. Colored or textured backgrounds look sharp, but it's important to use them with care. Understand first of all that even a small image placed in the `<BODY>` tag makes the Web page slower to download, or appear for people browsing. And because an even larger graphic is necessary for a textured effect, these pages download even slower.

Secondly, most computers today have video cards configured to view only 256 colors at a time. If your computer is capable of displaying thousands or millions of colors, you might create a page with a striking fuchsia-colored background. But someone limited to 256 colors may just see an ugly pink and green plaid—his computer's attempt to dither, or emulate, "fuchsia." To avoid this faux pas, pick from the standard 200 or so colors that are viewable to most computers.

Now back to your home page. Let's give it a creamy white background. Alter the `BODY` tag to match this one:

```
<BODY BGCOLOR=#FFFFFF>
```

If you haven't already, start your browser to take a look at your blossoming home page. (Use File, Open on your browser to locate `Myhome.htm`, then click OK.)

■ **A Table Of Contents.** The HTML list tags are a terrific way to present a table of contents (TOC) at the top of the home page, giving

HTML With Style

These three references provide critical views of HTML authoring. Read them and heed them.

Web Style Manual by Patrick Lynch
from Yale's Center for Advanced
Instructional Media

<http://info.med.yale.edu/caim/StyleManual.HTML>

Some find it stuffy, but if you aim for a business or professional audience, you'll find good advice here.

HTMLWriters Guild List Of Style Guides
<http://www.hwg.org/resources/html/style.html>

This site is a great place to start when looking for answers to specific questions.

HTML Bad Style Page
<http://www.earth.com/bad-style/>

If you tend to go overboard with special effects, take time to read this site's cautionary tales. □

readers a quick overview of a site. Most HTML lists are constructed by enclosing list item tags () between a pair of list definition tags.

Here's a TOC for a personal Web page in the form of an **unordered** (=) list. Browsers present the unordered list as a simple bulleted list.

```
<UL>
<LI>Mike Jones, repairman extraordinaire
<LI>This month: fix that drip!
<LI>Family members and their favorite appliances
<LI>Favorite Handyman Web sites
<LI>Elvis, Mike's pet iguana
</UL>
```

Note that the tag does not require a closing tag. When creating lists, however, don't forget to include the closing list definition tag. If you don't, the rest of your Web page will be indented slightly.

Use the same format for creating an **ordered** list, but with the = definition tags. The ordered list automatically places numerals in front of each list item. It's not typically used for creating TOCs, but it's handy nevertheless.

Outline lists. When dealing with a large Web document containing detailed information, you can nest lists (place one element within another) to achieve an outline effect. For example, if Mike Jones were to publish his lesson on faucet repair on the Web, the TOC might include the following list:

```
<UL>
<LI>Fixing Faucets
<UL>
<LI>Washer Basics
<UL>
<LI>What is a washer?
<LI>How to diagnose a faulty washer
<LI>How to change a washer
</UL>
</UL>
</UL>
```

In this example, we've nested two lists to achieve an outline. Notice that for every tag that begins a new level in the outline, there is a tag to end it.

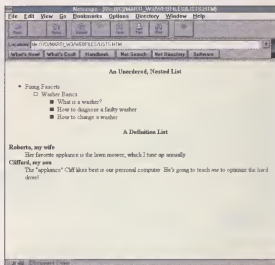


Figure 2. Washers and a handyman's family members grace our outline and definition lists.

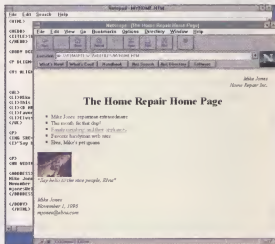


Figure 3. Finally home: a complete home page.

The indented or **definition list** (<DL>) is another fine method for constructing a TOC. A definition list, which is similar to glossary style, lets you create one line for the initial **definition term** (<DT>) and a second, indented line for the data description (<DD>). Use the <DL>=</DL> tags to define the list, use the <DT> tag to specify the term or phrase, and use the <DD> tag for descriptive text.

```
<DL>
<DT><B>My wife Roberta</B>
<DD> Her favorite appliance is the lawn mower, which I tune up annually.
<DT><B>My son Clifford</B>
<DD> The "appliance" Cliff uses most is our personal computer. He's going to teach <me></I> how to optimize the hard drive!
</DL>
```

See Figure 2 for examples of our outline list and definition list.

Choose one of the lists described above and insert the codes into your new home page. The one you choose depends upon the type of information you're presenting. Use the browser to check your work. Be sure to use a closing tag. You may use bold or italic text within your lists.

Eventually, you will want to create external hyperlinks from each list item to another Web page, so keep things simple. Good links from the home page might be a résumé, a brief biography, poetry or prose you've written, a description of your family, a favorite recipe, or a set of Web links you've collected.

So far, you've learned to align headlines and text, add color to your page, and create a table of contents. Now you'll see how easy it is to add graphics.

Home Page Graphics. This section of our tutorial requires access to the World Wide Web. For beginners, the best place to find graphics is on the Web. Once you start looking, you'll find an overwhelming number of pages offering free images, a kind of electronic clip art. Check the sidebar "Pictures Tell The Story" for some good starting points. Then fire up your Web browser to hunt for some images.

Copying graphics. Once you find an image you like on the Web, you can copy it to your hard drive for use on your pages. Here's how to copy an image:

1. Start your browser and jump to a Web site with an image library.
2. Place your mouse over an image and right-click.
3. In the pop-up menu that appears, select the option Save To Disk.
4. The image's file name will appear along with a list of directories on your hard drive. Scroll with your mouse to find the WEBFILES directory you created last month. Click WEBFILES to open it.
5. Click the Save button.

That's it. Go ahead and copy a file into your WEBFILES directory now. But don't get carried away with that right mouse button. Many Web artists guard the copyrights to their images. Play it safe and copy only public domain graphics. There are plenty to be had.

Placing images. Setting images on a Web page is different from placing them in a page layout program. Instead of placing the visual representation of the picture, you include a path to the image file in the HTML code. A path is the route a program uses to physically locate data elsewhere on the computer. In this case, the software is the Web browser. The HTML code for placing an image looks like this:

```
<IMG SRC="image.gif">
```

The HTML code is IMG SRC. The path—in this instance—is the name of the image file. That's because the Myhome.htm file and your image file are in the same WEBFILES directory. If the graphic existed in a subdirectory within WEBFILES, the tag and path would look like this:

```
<IMG SRC="graphics/image.gif">
```

where the subdirectory is called GRAPHICS. On the other hand, if the image existed in a directory above WEBFILES, the path would look like this:

```
<IMG SRC=" ../graphics/image.gif">
```

where the directory containing WEBFILES is called GRAPHICS.

Yes, it can be confusing for folks unfamiliar with the DOS filing system. That's why newbies are better off, at least initially, to keep their HTML and graphics files in a single directory.

Now, place a graphic in your page with the tag. Set it under the table of contents.

Here are some things to keep in mind:

- Place a
 tag after the image. This will keep text from running up along side the image.
- Be sure to use quotation marks as shown, or the image will not display.
- Be absolutely sure that the image file (Image.gif) and the home page (Myhome.htm) are both in the WEBFILES directory.
- Try using the <CENTER></CENTER> command around the image.

Alternative text. You may think graphics are exciting, but many people who connect to the Web via modem often turn off graphics for speedier surfing. When you're addressing this audience, HTML's ALT command (which stands for "alternative to graphics") lets you

type in text descriptions of your pictures. In fact, a Web image is technically incomplete without ALT text. It's little trouble to accommodate text-only surfers. Here's how it looks:

```
<IMG SRC="iguana.gif" ALT="My iguana, Elvis.">
```

Type in a brief ALT description of your image now.

Next, just for kicks, try looking at the page with graphics turned off. In Netscape, you can temporarily turn off the graphics by going to the Options menu and deselecting Autoload Images.

Before you finish, clean up the template. Remove the extraneous paragraph tags and add your personal information to the <ADDRESS> tag.

Congratulations! You now have a basic home page like the one shown in Figure 3. Think of it as a starting point for your communications with the world. Next month, we'll reveal fancy techniques with graphics and more secrets for adding sophistication. In the meantime, create the pages that correspond with your table of contents. And dream up some ways you can make people talk . . . ■

by Marti Remington

Pictures Tell The Story

All of these sites are worth bookmarking with your browser and visiting regularly.

Bob Allison's List Of Image Sites

<http://miso.www.com/~boba/spider/images.html>

This index is somewhat unreliable (i.e., many links are dead), but it does link to some interesting sites. We liked the Icon Gallery and its whimsical Web site "award" graphics.

Colour Selector Page

<http://catless.ncl.ac.uk/Lindsay/colours.html>

Although it's a little tricky to figure out, this site will show you how your page can look with a new set of colors. The "colour swatches" illustrate standard Web colors with their English-language names.

HYPE Background Selector

http://www.phantom.com/~giant/HYPE_BACK/hypeback.html

Find tons of textured backgrounds with a relatively short wait. Click a sample texture to see how a full page looks.

Pattern Land

<http://www.netcreations.com/patternland/index.html>

Find even more great background images at our favorite background image page.

Randy's Icon And Image Bazaar

<http://www.iconbazaar.com/>

Although this page takes awhile to download, it's worth the wait. It's organized into logical sections, so you won't feel overwhelmed.

Resources For Icons, Images, And Graphics

<http://socsci.colorado.edu/~brumbaugh/graphics.html>

The mother of all image indexes, this page is our favorite. It's updated frequently, so each visit is a treat. Check out one of the searchable image databases. Wow!

UK Shops Online

<http://www.ukshops.co.uk:8000/tc/rgb.html>

Here's a simple way to familiarize yourself with hexadecimal codes. Fill out a form with hexadecimal codes, submit the form, and get a preview of the colors.

Yahoo!

http://www.yahoo.com/Computers/World_Wide_Web/Programming/Icons

The Yahoo! search engine has an excellent list of pages containing free graphics.

Here, you'll find interesting tidbits like the Ford (auto) Icon Collection. □

Hands Off

Protecting Portable Computers From Thieves

Portable computers, by definition, are very easy to transport from one place to another. That's what makes them so handy. It's also what makes them easy to steal. Too easy.

As the popularity of portable computers has increased over the last few years, the number of reported thefts has jumped dramatically. In 1994, miscreants carried off about 150,000 portable computers for an estimated monetary loss of \$426 million, according to statistics from Safeware, a national computer insurance agency. In 1995, that number jumped by 39% to 208,000 stolen portable computers. The total monetary loss in 1995 was estimated at \$640 million. And that figure doesn't include the value of the hours of hard work and sometimes irreplaceable information that are lost when people are robbed of their machines.

What's a hardworking portable computer owner to do? There are a number of steps you can take to thwart thieves, including common-sense tactics, low-tech hardware, and high-tech booby traps. If the sticky-fingered creeps still get your machine, there are ways you can try to get it back, or at least receive compensation for your loss.

Use Common Sense. Unfortunately, the world in which we live requires most of us to be on our toes all the time, especially if we're carrying around an expensive piece of equipment like a portable computer. Charles Drake, marketing director at Safeware, says the best way to protect your computer is to think about your situation and to be conscious of your surroundings whenever you're carrying or using your portable computer.

For example, he says, don't operate your portable computer in a high-traffic area. Time spent waiting in a subway terminal or a airport might seem like the perfect opportunity to get some extra work done, but it can lead to problems. At best, you expose your computer to people who might decide to try to swipe it from you later. At worst, a quick-handed thief could scoop up your little pride and joy and disappear into the crowd before you have a chance to

react. If you're in a congested area, it's probably best to just hang on to your machine and wait until later to use it.

And when you do hang on to your portable, Drake says, make sure you really hang on to it. When carrying it in a bag, try to develop the habit of walking with your hand directly on the strap with the computer slightly in front of you. This should prevent someone from slipping the strap off your shoulder and going in the other direction with your bag and computer.

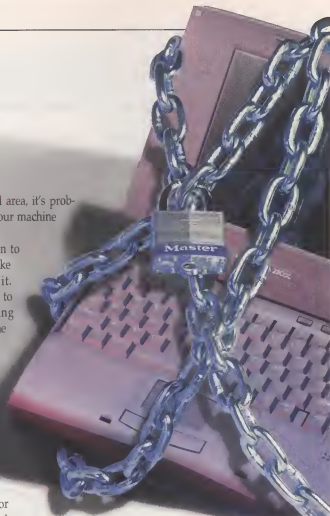
Once you arrive at your destination, whether it's work or a hotel or wherever, there's no reason to be any less cautious. If you have to leave your portable behind, lock it in a desk drawer or hide it in a closet. If your office is near a busy hallway, obstruct your computer from view by placing a stack of books or picture frames around it on your desk.

Also, Drake says, make sure you clearly mark your computer. Use business cards to label the outside and then put a few on the inside, in places where only you would look to find them. Even better, use an etching pen to mark some of the internal components. Marking your portable computer won't deter theft, but it might help you get it back if it's stolen and recovered.

Finally, he says, make sure you back up your information often. That way, even if someone steals your hardware, you still have access to all your vital information, and you'll have the files necessary to rebuild your shattered life.

In addition to these common-sense precautions, there are several other methods you can use to try to protect your portable computer and the information it contains.

Tie It Down. One of the most logical, and affordable, methods for preventing portable computer theft is to physically attach it



to a sturdy object such as a table or desk. The easiest way to do this is with a cable and lock. There are many types of these products (with a good setup costing anywhere from \$28 to \$60), according to Joe Mazza, vice president in charge of sales at Datamation Systems. Datamation specializes in anti-theft devices for portables as well as all other types of computers.

To use a cable and lock to secure your portable, you attach the cable to the computer, run it around the leg of a table or another sturdy, immovable object, and then back to the computer, where you lock it. Once the computer is tethered, you can operate it as usual.

There are several different methods for attaching the cable to your portable, Mazza says. The easiest is through a built-in security slot that comes standard on many newer portable computers. Just slide the locking device into the slot, and you're ready to lock it down. If your computer doesn't have this slot, you might have to attach the cable another way.

An alternative method is to secure a small plate with its own cable slot to your computer. These plates come with an industrial strength glue that won't come off without a major struggle. Unfortunately, this method can mark

up the outside of your PC, which is probably not an option if you're leasing or borrowing it.

If you must keep the outside of your computer pristine and you don't have a security slot, you can try a diskette drive lock, Mazza says. These devices slide into the diskette drive of your portable and lock into place. You can start up your computer with the lock in place, and it not only helps to secure your computer from theft but also can prevent someone from inserting a virus-infected diskette into your drive. The catch with a diskette drive lock is that it only works if you have a permanent diskette drive in your portable computer. A lock attached to a removable drive does little good.

While cable and lock systems are effective, nothing is completely foolproof, Mazza says.

"If they have wire cutters, they might be able to get through and take it," he says. "But a cable can stop the person who happens to see the computer sitting there and who decides to try for a 'snatch and grab.'"

■ **High-tech Traps.** Other theft-deterrent products available are a bit more advanced technologically than tying your computer to the table. One of these is a motion sensor alarm. Datamation offers one of these little numbers in the form of a small, thin box that sells for about \$70 and attaches to the display section of your portable computer. You input a code to arm and disarm it, and if someone tries to move it when it's armed, things get noisy.

"You plug the code in before you leave for lunch, and if someone tries to move the computer, a 110-decibel alarm sounds," Mazza says. "Hopefully, that will draw somebody's attention."

The biggest problem with a motion sensor alarm is the high incidence of false alarms, he says. Many people forget to disarm their own alarms, and an ear-splitting sound going off several times a day is not very conducive to a good work environment.

Absolute Software Corp. offers a slightly more covert means for stopping computer thieves—by catching them after the fact. According to David Legg, Absolute's vice president of business development, *CompuTrace* is a new software/service package that you activate by loading a small program onto your computer's hard drive. The program quietly operates in the background, with no visible signs to the user. Antivirus programs cannot detect the program; it can survive

high- and low-level hard drive formats, and it is virtually impossible to remove.

Once a week, the program silently activates the computer's modem and calls into the CompuTrace monitoring center, giving an identification number and the telephone number from which it is calling. If someone steals your computer, you just call the monitoring center, which places your account on alert.

The next time the computer calls in (and it almost assuredly will since most portable PC users, including thieves, take the machines online), the service traces the call (to anywhere in the United States or Canada) and sends instructions to the computer to repeatedly send its message through the modem. The service center pinpoints the computer's location and contacts local law enforcement in an effort to retrieve the stolen machine.

CompuTrace was still in beta (or pre-release) testing when *PC Novice* went to press, but Legg says it should be available to the public before the end of 1996 at a cost of about \$60 a year.

■ **It Still Happens.** Unfortunately, even if you tie it down, set it to squeal, and program it to call home, there's still a chance someone might manage to rip off your portable computer. That's life. But there are a few steps you can take to make this loss a little less traumatizing.

For example, if someone steals your computer, you may take some solace in the fact that you had it fully insured. Unfortunately, not all homeowner's policies cover portable computers, and many that do won't cover all the possibilities. Also, some policies carry very high deductibles. To be safe, call your agent and find out more about your policy. If your machine's not fully covered, you can call Safeware. Drake says his company will insure a computer for up to \$3,000 for \$100 a year. The coverage includes everything from theft to natural disasters to power surges.

Another thing you can do if somebody gets a hold of your machine is to try to make it more difficult for them to sell it through regular resale channels. You can do this by registering it with the Stolen Computer Registry. The registry is a free service provided by NACOMEX, the national computer exchange. You simply provide the make, model, and serial number of your stolen computer to folks at the

registry, and they add it to their huge database. Law enforcement agencies and legitimate second channel dealers can access this database and run the serial numbers of computers they suspect may be stolen.

If your PC reaches the right people and they run the serial number through the registry, there's a chance you might recover your machine. The odds aren't great, but at least there's a chance. And the authorities may catch the thieves trying to sell their ill-gotten goods.

If all goes well, however, you won't ever be in a position where you have to register a stolen computer. By playing it smart, and possibly investing a little money in an antitheft device, you and your portable computer should stick together as long as you want. ■

by Tom Mainelli



Kensington's MicroSaver security cable (800-535-4242) slows down thieves attempting the old snatch and grab.

For More Information:

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Absolute Software Corp.
(800) 220-0733
(604) 730-9851
<http://www.absolute.com>

Datamation Systems Inc.
(201) 393-0004
(212) 732-3824
<http://www.pc-security.com>

Safeware, The Insurance Agency
(800) 800-1492
(614) 781-1492
<http://www.safeware-ins.com/index.html>

Stolen Computer Registry
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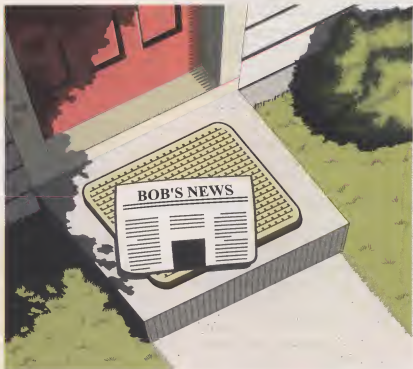
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News On The 'Net:

Personalize Your Own Paper



The Internet currently provides access both to more vital news and more complete wastes of time than ever before. A central quandary in this Age of Information Overload is sorting grain from chaff.

Daphne Kent, a spokesperson for CompuServe, knows one solution. Every morning, she glances at a single screen in CompuServe's Executive News Service area. There, reading what the press is saying about her company and all of its competitors is as simple as clicking a headline.

"We use it everyday," says Kent, a satisfied user as well as a promoter of the service that lets her and other CompuServe members keep up with the news their way. Kent may have a special interest in CompuServe, but she isn't alone in relying on the increasingly powerful personalized news services available through commercial online services and the Internet. Rather than

displaying a mishmash of articles from scattered electronic publications, such services offer up only the news you see fit to print. Personalized news brings you the information you need without using up the time you don't have.

For example, CompuServe's service culls articles from wire services such as the Associated Press, Deutsche Presse-Agentur, Dow Jones, and the Australian Associated Press. Users set up special folders defined by the keywords they choose. Only articles from the news services that contain those keywords—say, "Bosnia" or "New York Giants"—are placed in that specific folder. To read the latest on whatever interests you, you just open the folder.

"It's very, very convenient," Kent says. "It gives you the kind of news you want when you want it."

However, the CompuServe version also costs \$15 an hour to use. Kent says the price

isn't as steep as it sounds because most users spend only about 10 minutes a day downloading the articles they want to read. The actual reading happens offline for free. Even if it were more expensive, professionals probably would be willing to pay. According to IBM, some \$30 billion is already spent on business information each year, much of it on expensive-to-produce-and-deliver paper. That sort of potential market, combined with the powerful features computers make possible, has dozens of news companies racing to the Internet.

Electronic Paperboys. One main criterion to differentiate among the personalized news services popping up each week is the way they deliver information. Most personalized news is read via the World Wide Web, the standard way to view graphics and text over the Internet. Users with Web browsing programs can easily try out various sites to see what they offer.

One easy-to-set-up free site is My Yahoo!, a new news service from the same people responsible for the Yahoo! search service. After a simple registration, you can set up a personalized front page complete with headlines about topics you find interesting. Clicking a headline brings up the text of a complete Reuters news story. To try it out, look for the My Yahoo! link at <http://www.yahoo.com>.

More specialized and complete news services often require some type of payment. The Wall Street Journal Online edition (<http://www.wsj.com>) is one of the more famous members of this crowd. (To learn how to use this service, see the sidebar "Keeping Tabs On Wall Street.") Articles on-screen are taken straight from the *Journal* print edition.

IBM's InfoSage Web site (<http://www.info.sage.ibm.com>) is an example of a combined delivery method. Content is available on the Web as usual and also can be E-mailed to subscribers. Joe Damassa, vice president and managing director of InfoSage, says about 60%



of his service's subscribers read news on the Web while the rest opt for E-mail delivery.

"A lot of people, even though they have Web access, prefer E-mail," he says, despite the more visually appealing nature of the Web. Whichever way you choose, InfoSage will cost you \$24.95 each month.

Individual's NewsPage Direct is another company that, for the cheaper fee of \$6.95 a month, will deliver daily E-mail full of news briefs selected according to your profile. The full text of these briefs can be found on NewsPage's Web site (<http://www.newspage.com/NEWSPAGE/directreg.html>).

Silicon Reporters. While users might have more contact with the way news is delivered, the people working behind the scenes at personalized news companies are more concerned with how to search and select news items that match customized profiles. With all of the information buzzing inside computers around the world, it can be a big task searching through everything and packaging it for a morning delivery. Different personalized services tackle the problem in different ways, but more often than not, computers themselves become the editors.

InfoSage's operation is a good example of how a personalized service runs. Damassa

explains that most of the heavy lifting is done by computer programs that search through 2,200 different sources for information on more than 1,000 topics. The search goes on hour after hour with a minimum of human intervention, he says.

"We don't have human eyeballs looking at these stories," he says. Instead, once the computer categorizes a story in a certain topic area, it is matched up against individual profiles created by users. All subscribers interested in a certain topic will see that information on their personalized InfoSage Web page or in an E-mail message. The only time a human becomes involved before that point is if the computers cannot decide whether a story is too similar to one already delivered. In that case, a live person makes the call.

Damassa says several features of InfoSage make it and for-pay services like it good deals. The first factor relates to the "garbage in, garbage out" principle. If you search through the big pile of garbage that makes up a large chunk of the Internet, you're going to come up with a lot of extraneous hits. InfoSage searches only real news feeds from reputable sources.

"We have licensed deals with content providers," he says. "We're sure all of the information we've got has value."

The other factor, Damassa says, is that most people aren't skilled at asking questions of Internet search services. If someone wanted to find news about IBM from a standard Internet search service, he or she might type something such as "tell me about IBM," a phrase that would pull up thousands of articles. To do a more limited, and therefore useful, search requires someone with a library science degree to write a proper query, Damassa says. Queries are sentences formed in the particular logical language most database programs understand. InfoSage has people experimenting with such queries behind the scenes.

"We have library science people building our topics," he says. Each of the 1,000 or so InfoSage topic areas is defined by a complex query that is perhaps 100 or 200 words long, far beyond what you find at basic search services. All of InfoSage's queries are monitored, tested, and refined before going into general use.

Coming up with these kinds of queries takes a lot of legwork and finessing, and even then it can be hard for a computer driven by logic alone to do the best job possible. That's one reason InfoSage and other news services are looking closely at what many people say is the Next Big Thing for information retrieval: a little idea called agents.

Wall Street

Keeping Tabs On Wall Street

Though each personalized news service available on the World Wide Web or through commercial online services is set up a little differently, most share a few commonalities: Interested users are asked to choose a user ID and password and then create a profile. We went through each step at the Wall Street Journal site to see what it involved. Please note that Web sites often change, so remember to read all the information on a page before clicking buttons.

1. Type the Journal's address into your Web browser program: <http://www.wsj.com>. Hit the link titled Subscribe Now and begin to fill out the registration information that pops up on the next page.

2. Next, you are presented with a long legal agreement, which basically says that the news is for your personal use only. Click the I Accept button.
3. The next screen is the login area, where you enter the name and password you created by following the directions on the registration page.
4. Once you're logged in, the front page shows up. Click the Personal Journal words on the left side of the screen.
5. The page will say you have no personal profile at the moment. Now is the time to change that. Follow the on-screen instructions to continue.
6. We were presented with a screen with four blanks to put words or phrases that are important to us. We chose **computer** and **Internet**.

7. Now you have a chance to click a button to list companies or Journal features that are important to you. Journal features include the editorials and various columns. When finished with your selections, click the button at the bottom of the screen.
8. On the main page, remember to hit the Save Personal Profile button. Now you should be all set to read your personalized news.

The Wall Street Journal's online edition normally costs \$49 a year or \$29 a year for print Journal subscribers. However, Microsoft is picking up the tab through January 1997 for users of the recently released *Internet Explorer 3.0* Web browser. Check out <http://www.microsoft.com> for details. ☐



■ Changing With Your Interests.

"Agents are being touted as the future of a lot of things," says Max Metral, chief technology officer for Agents Inc. The statement may look sarcastic on paper, but listening to his voice, you can tell he means it. In theory, agents are programs that automatically perform tasks for computer users and, over time, "learn" what their controllers like and modify their future behavior accordingly.

As demonstrated at Agents Inc.'s FireFly Web site (<http://www.firefly.com>), agent programs find out what you might like by determining what you know you like. For instance, today's FireFly site begins by presenting users with lists of movies. Visitors then rate each movie according to whether it was great, terrible, or somewhere in-between. After the agent has a feel for what types of movies and music users enjoy, it can suggest movies they haven't seen by matching their preferences with other users who have similar likes and dislikes.

If several people out there love many of the same science fiction movies you do and also said they enjoyed "Space Wars IV," a movie you haven't seen, it stands to reason you might like it as well. Instead of the computer searching through movies to find something you might like, it uses the intelligence of the community to pick matches.

"This allows you to leverage what we know works," Metral says. People, he says, are far better judges of fuzzy matches like news and movies than the most powerful, but ultimately simple, machines.

The ability to draw upon a database of agent-gathered knowledge offers intriguing possibilities to the arena of personalized news, where Metral says his company plans to focus attention next. A news version of FireFly could begin by asking you for a couple of broad categories of news, say "business" and "baseball." Next would pop up a list of headlines you could click to read the full stories.

"You could say, 'Yeah, that's a good one' or 'More stuff about this,'" Metral says. Over time, the agent would begin to return stories more closely matching your interests. As your interests changed, the agent would change with you by comparing what you are reading to what others are reading and suggesting like topics to you.

"It feeds back on itself," Metral says.

A true agent-based system such as the one Metral describes would likely be free to users and supported by advertisements showing up on each page. This prediction is based upon the fact that the entire concept of agents is a marketer's dream come true. A car manufacturer looking to sell a new pickup truck could



IBM's InfoSage service is a business-oriented news finder that covers more than 2,000 topics.

pay to have its advertisement appear on the news page of anyone whose agent has acquired an interest in trucks or new truck reviews. Simply put, agents possess the ability to match ads to people who actually might want to read them on a global scale.

"These sort of qualified leads present an advertising opportunity that wasn't available before," Metral says. In effect, advertisers can have ongoing, real-time focus groups for ad feedback. That's much different from the current model of collecting names and addresses and flooding people with costly junk mail.

Along with making advertisers happy, emerging agent technology will help push personalized news services to the next level. IBM's Damassa says that as news services become both more powerful and easy to use, they will begin to change the entire way information is procured in large corporations.

"We're on the brink of a paradigm shift," Damassa says. Rather than a centralized corporate librarian finding and distributing information, news services let individuals obtain what they need on their own. Damassa compares the trend to the 1980s move from mainframe computers to PCs on each desktop, a similar decentralization revolution.

■ **News To You.** How people view the information they retrieve is also likely to change in the near future by combining the convenience of E-mail with the depth of the Web. *Netscape Navigator's* new Inbox Direct feature exemplifies the change. Users of the popular Web browser can sign up to have information delivered to their E-mail account

in a graphics-rich format that looks like a Web page. The ability of the Netscape E-mail client to display the same type of information as is found on the Web makes a graphical E-mail news service possible.

Damassa says InfoSage is just one of the companies examining its delivery method in light of new E-mail capabilities. Future delivery systems, he says, are likely to be hybrids of today's E-mail and Web services. Most likely, customers will have some type of front page with graphics and text delivered to their E-mailbox. Clicking headlines there will launch the user's Web browser for the full text of articles and other detailed information. Because people can access

their E-mail account from any computer connected to the Internet, news agents could follow travelers around the globe, finding and delivering information they want.

Agents Inc.'s Metral says the scenario of agents hunting news while you go about your day is just another example of the computer finally becoming more of an information conduit rather than a confusing machine.

"The computer is fading into the background," he says. "It's becoming a tool, not an end of itself." While the transition progresses, you're sure to be able to find out all about it, as it happens, through an Internet news service. ■

by Alan Phelps

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<http://www.compuserve.com>

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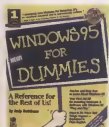
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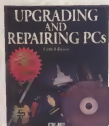
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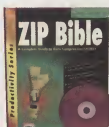
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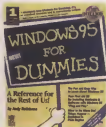
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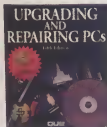


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4. Convenient Service. At 3-4 week intervals (15 times per year), you will receive the PC Users' Book Club News, describing the Main Selection and Alternate Selections, together with a dated reply card. In addition, up to three times a year, you may receive offers of Special Selections which will be made available to a group of select members. If you want the Main Selection, do nothing, and it will be sent to you automatically. If you prefer another selection, or no book at all, simply indicate your choice on the card and return it by the date specified. You will have at least 10 days to decide. If, because of late mail delivery of the News, you should receive a book you do not want, we guarantee return postage.

If reply card is missing, please write to PC User's Book Club, Dept. B-BV4, 3000 Cindel Drive, Delran, NJ 08370-0001, for membership information and an application.

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PC Novice 11/96

Find It ONLINE

Alta Vista Search My Computer Private eXtension <http://altavista.software.digital.com>

Alta Vista gives users the chance to bring home the capabilities that have made it one of the largest search services on the Web. The Alta Vista Search My Computer Private eXtension, available through download at this site, can locate and identify data in more than 140 different file types, including files supported by *Microsoft Word*, *Excel*, and *PowerPoint*, and *Eudora* e-mail.

Gettysburg Address <http://lcweb.loc.gov/exhibits/G.Address/ga.html>

Six score and thirteen years ago on Nov. 19th, Abraham Lincoln made his famous speech at Gettysburg. This site, created by the Library of Congress, contains the invitation requesting Lincoln's presence at the consecration of the cemetery, the only known photo of Lincoln at Gettysburg, and drafts of the speech, as well as the complete text.

JFK Assassination Research <http://www.bayarea.net/~restech/jfkresix.htm>

On Nov. 22, 1963, the United States lost a president. That's a fact. But the issue of who committed the assassination, why JFK was assassinated, and how the assassination was orchestrated remains a matter of opinion for many people. The articles presented at this site offer a number of theories that try to explain the significance of various events surrounding the assassination. For more information on the subject, visitors to



this site can follow the links to related JFK pages.

GoSki! <http://www.goski.com>

Snow will melt and winter eventually gives way to spring, but GoSki! is always available with the latest skiing news, reviews, reports, and conditions from around the world. The GoSki! World Resort Database covers 1,600 ski resorts in 25 countries, and the Gear page provides information on dozens of ski equipment manufacturers. Travel, lodging, weather, and news reports round out the mountain of ski services available here.

Reinventing America II <http://pathfinder.com/reinventing>

With the presidential election around the corner, this online political simulation gives you the opportunity to try your hand at running the government. After considering the facts and debating the issues with your fellow players, submit your plan to a virtual Congress. At the end of the week, you can review the effect your decisions have had on the country. The game will only run through January 1997 so you'd better hurry if you want to play.

MapBlast <http://www.mapblast.com>

Create a detailed street map for use at a Web site, in a business presentation, on the road, or wherever you need one. Simply enter any street address in the United States, and the MapBlast Locator will generate a map for that area, even designating the exact location of the street address on which the map was based.

World Peace Day <http://www.peaceday.org>

World Peace Day is celebrated only once a year—Nov. 17 to be exact—but this page gives you information on how to support world peace all year 'round. Send a message of support to the troops in Bosnia, send your concerns to the president via E-mail, register to vote, post a message to the Peaceful Discussions Webboard, or link to the pages of other organizations actively promoting the cause of peace.

Butterball Presents <http://www.butterball.com>

There's more than one way to skin a cat, and this page proves there's also more than one way to cook a turkey. Butterball dishes out tips on preparing the perfect turkey dinner. Or, if the

traditional roast turkey sounds too dull for your Thanksgiving feast, why not sample the grilled Jalapeño Turkey Burgers, Italian Garden Style Grilled Turkey Kabobs, or one of the dozens of other recipes included here. Health-conscious individuals will enjoy browsing the nutritional data, kids can print out a picture of Turkey Tom to color for Thanksgiving fun, and everyone will enjoy the turkey trivia and teasers.

VISA Expo <http://www.visa.com>

The upcoming holiday season inevitably will involve traveling and spending, and VISA's ATM Locator does its best to ensure that you always have cash in your pocket so you can do both. This interactive map pinpoints the three ATMs nearest to any street address or intersection in the United States. Visitors to this Web site also can peruse the sporting events calendar, stroll through online shopping malls, or plan a Christmas vacation.

The Weather Channel <http://www.weather.com>

Neither rain, nor snow, nor sleet, nor dead of night can keep the Weather Channel from presenting the weather forecast at its Web site. The Quick Weather Finder lets you review the current temperature, wind speed, relative humidity, and barometric pressure as well as a five-day forecast for hundreds of U.S. cities. You also can peruse the latest weather news, aviation reports, gardening weather information, UV index, and other weather-related maps and reports. ■

Compiled by Jeff Dadd



Kid Friendly Computer Accessories Designed in Fun Colors

Why can't kids have computer accessories too? For the family, the children's need to use a computer is a major motivating factor in purchasing a PC. Kids need a PC for doing homework, and to explore new learning activities.

Kids also need a place to store and protect their CD ROMs and disks. Why mix up their stuff with mom and dad's or worse with little brother Timmy? At SRW, we recognize the little needs of kids and have designed their

accessories in fun, distinct colors and have even created fun animal stickers to add personality to each disk storage item. What can be more fun?

Kids Smart™ accessories are

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- Separates children's software from parents and siblings software using fun colors
- Teaches responsibility by storing and protecting their own disks and CD ROMs
- A natural complement to the PC purchase and purchase of "Kidware" software.

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Extra Trunk Space For The 386

7he hard drive's full? OK. Time to begin the painful task of paring down the files and programs on your system to the bare minimum. At times, the decision seems to carry the weight of deciding between children. You must not look back. You must forge ahead. But wouldn't it be nice . . .

Yes, it would be great if you didn't have to choose among your files and programs. Fortunately, you don't. Your hard drive might be full, but by adding one of the new storage devices on the market, you can make room on your hard drive and store files without popping diskette after diskette into your PC.

Computers using a 386 microprocessor are compatible with several current storage devices. These add-ons (tape drives, Zip drives, etc.) might be a little more expensive than a used part, but they're easy to find, and if you ever decide to upgrade, you can take the storage device with you.

Both internal and external storage add-ons are available. An internal drive, such as a hard drive, resides inside your computer's case. An external drive, such as a tape drive, connects through a parallel port and rests in a convenient spot nearby. Saved desk space is the biggest advantage to the internal storage device. You can tuck the device neatly in with

the rest of your PC package. External storage devices, on the other hand, leave you with an extra peripheral device to find a home for, but they're easier to install.

■ **Internal.** The most obvious solution to a storage shortage is to install another hard drive, either a roomy replacement unit or a second hard drive that works in addition to the one currently on your system. (Before you go shopping for an internal hard drive, open up the computer's case and see how much room you've got for installation.) It's possible to install a brand new hard drive in a 386 machine, but you'll need to add some software to make it run. A 386 system won't support a hard drive that's larger than 528 megabytes (MB) without the use of a disk manager program, which comes with a retail hard drive package and lets the older system read a new hard drive.

To find a drive smaller than 528MB, you'll have to look at stores that carry used computer parts because nobody makes a drive that small anymore. Most drive manufacturers, however, carry the disk manager software necessary to install a hard drive on the 386. Be sure to request the program from the manufacturer if it's not included with the drive.

The only difference in the installation process between using your hard drive as a primary

storage device or a secondary storage device is the placement of the jumper switches on the drive. Follow the instructions in the manual for your particular drive for more detail.

■ **External.** One of the hottest external storage alternatives going is Iomega's Zip drive. In terms of technology, this drive falls somewhere between a regular diskette drive and a magnetic tape drive. The Zip drive, which accepts 100MB cartridges, is just "like a diskette drive on steroids," says Jim Wilson of Iomega technical support.

The drive's minimum system requirements are a 386 processor, DOS 4.0 and/or Windows 3.1 or newer, and 640 kilobytes (KB) of RAM. Among storage add-ons, the Zip drive is one of the easiest to install. You can install it either internally via a **Small Computer System Interface (SCSI)** interface or externally by attaching it to the parallel port. (SCSI, pronounced "scuzzi," is a fast type of parallel connection.) The 386 didn't come with a standard SCSI interface, so you'll have to plug an adapter card into one of the PC's expansion slots to use the SCSI approach.

The external installation through the parallel port is the simplest and most convenient approach. You don't even have to worry about the new drive taking up your parallel port. The Zip

Memory Lane

The Apple II made its debut at the West Coast Computer Fair in April 1977. Sold at the low price of \$1,298, the Apple package included game paddles and a demonstration cassette. Notice anything missing in the photo? The Apple II did not come with its own monitor. The power supply weighed "only two pounds" (according to the original press release), and the computer used a regular audio cassette recorder for storage.

The model shown here, the Apple IIE, was the last version to be offered. It was released in December 1982 and unofficially discontinued in 1993. No, that's no misprint. Apple never officially discontinues its computers, but computer historians mark '93 as the end of the Apple II era. ■



drive connector lets you plug your printer in through the back of the Zip drive connection.

After plugging the drive into the parallel port, you simply install the software and then begin storing data to and retrieving it from the cartridges as you would a diskette drive or a hard drive. You assign the drive a letter of your choosing and reference it through the letter, just as the hard drive is accessed as C:.

Iomega claims it's possible to run programs directly from the Zip drive, but we've found the retrieval rate from the Zip drive (compared to that of a hard drive) dramatically slows system performance. You'll also need to go through the process of linking an icon to the executable file of the program in order to access it with any ease.

Another alternative from the Iomega lineup is the Jaz drive. It has the same system recommendations as the Zip drive and holds one full gigabyte of data per cartridge. The Jaz drive, however, is a little more complicated to connect internally than the Zip.

The Jaz drive squeezes into a 3.5-inch diskette drive bay, but it requires a SCSI interface, Advanced SCSI Programming Interface (ASPI) compatibility, and SCSI 2 specifications. The ASPI compatibility and SCSI 2 specifications must be added to the 386 machine via software and adapter cards, making the internal installation a complicated process. Again, the external alternative is recommended for installation ease.

The SyQuest EZFlyer 230 drive, which uses technology similar to that of the Zip drive, stores information on 230MB cartridges. You can connect the EZFlyer through a SCSI connection or through your parallel port.

From Our Readers...

Dear PC Novice,

My mom has an IBM PC model XT. It has been upgraded to the point of having two hard drives, each being capable of holding about 10MB each. It has Norton diagnostics, WordPerfect 5.1, BASIC version 4.3.3, Quick BASIC 4.0, and a DOS directory. It has a monochrome display with an MDA adapter and an 8088 microprocessor with no coprocessor. It has DOS 3.3 and two COM ports. One port happens to be a modem port (external), and we've just received an internal modem. Can we install it?

Also, this PC has a strong chance of failure if the microprocessor encounters graphics. Is any part of the Internet safe for this computer to access?

Joe Brown/Dotsewah, TN

Yes, you can install an internal modem. Once you overcome the initial fear of taking the cover off the PC, installing an internal modem is no more complicated than installing an external unit. It simply fits into one of your expansion slots. By installing the modem internally, you also free your external port for other devices. The compatibility may depend partly upon the speed of your modem. You won't fry your system with a higher-speed modem, but your system is most likely to recognize a 2400 bits per second (bps) modem.

Going online with an 8088 machine can be a little complicated (see "Taking an 8088 Online" in our October issue), but there are areas that contain text only. Your browser should help you filter out the graphical elements.

Send questions about old computers to:

**Your Old PC
c/o PC Novice
P.O. Box 85380
Lincoln, NE 68501** (Volume prohibits individual replies.)

The final storage option, the magnetic tape drive, can be installed either externally or internally. Magnetic tape has been used for storing data since the early days of computing, and though the devices have changed shape and form, tape is still a viable option.

The tape drive is probably the least expensive of the storage options, but it is also one of the slowest. If you don't plan to access the files you store on this secondary drive very often, the magnetic tape drive is the most economical choice.

Commodore 64 Diskette Drive Tips

If you own a Commodore 64 and think you're the only one with diskette drive problems, think again. Due to the trial and error in the drives' development, a lot of users deal with temperamental devices. Here's a recap of the difficulties with the first drives and some possible solutions.

The 1541 diskette drive (the drive's number is labeled on the outside of the drive) is a single-sided drive that tends to have an alignment problem. Signs that your 1541 is out of alignment include trouble reading commercial diskettes and trouble reading diskettes created more than a year ago, but less trouble reading recently written diskettes. Commodore service centers will typically align a 1541 for anywhere from \$20 to \$45. (For a listing of Commodore service resources and equipment, see Jim Brain's Commodore page

<http://www.msen.com/~brain/faq4.html>.) There are also 1541 alignment programs, (e.g., *Physical Exam 1541* and *Free Spirit's 1541/71 Alignment System*) that let you align a 1541 yourself. The success rate with these do-it-yourself programs has been reported both ways.

The 1571 double-sided diskette drive (it can read the single-sided diskettes) tends to be a little slow slipping into single-side read mode and a little slow when writing to the back side of the diskette. If your drive seems slow, it might be because the head is not close enough to the diskette because the spring does not provide enough tension. There is a replacement part, but you might try opening up the case and placing pennies on the drive to weigh it down. □

Courtesy of Jim Brain, Commodore expert and author of a Commodore Web page

■ **What It'll Cost.** The price of adding storage to your system may seem a little steep, but it's minor compared to the price of purchasing a new system. The Quantum Bigfoot hard drive (\$299 for 1.2GB) is the cheapest of the options mentioned, but when that's full, you'll need another upgrade. But unless you want to keep an unusually large number of files, 1.2GB should be more than adequate for a 386 system.

The Zip drive is more expensive for a full gigabyte of storage, but it costs only \$199 for the drive and a single 100MB cartridge. Each additional cartridge costs \$15. The smaller storage capacity and affordable price of the cartridges make it easier for you to customize your own storage space.

The Jaz drive is the most expensive of the options, ringing in at \$499 for the drive, plus an additional \$100 for each 1GB cartridge. Although this drive is compatible with the 386 machine, that much storage will probably not be worth the price for an older machine.

SyQuest's EZFlyer costs \$299 for the drive and an additional \$29.99 for each 230MB cartridge. The initial drive cost is a little more than the Zip drive, but the additional storage has a slightly lower per MB cost.

Exabyte's Eagle 96 tape drive (\$187) gives customers the option of using either 1GB (around \$25) or 3.2GB (\$70) tape cartridges. The Exabyte drive offers the most storage at a competitive price. By comparison, Iomega's Ditto tape drive costs \$299 and includes a 3.2GB cartridge. Additional cartridges cost \$40.

For the 386 machine, the Zip drive is probably the easiest and most practical of the add-on storage drives. But all the options are relatively close in price for a tremendous boost in storage capacity. To choose the drive that's right for you, be realistic when shopping for additional storage. If you think you might want to upgrade your machine in the future, consider a drive that you can take with you.

Also consider how much storage you can really use on your machine. Additional storage space won't boost your system's speed, but it might give you peace of mind to know you never *have* to throw anything away. ■

by Elizabeth Panska



The SyQuest EZFlyer 230, which holds 230MB on each cartridge, offers one option for a quick boost in storage capacity.

For More Information:

Exabyte
(800) EXABYTE
(303) 417-5500
<http://www.exabyte.com>

Iomega
(800) MY-STUFF
(801) 778-1000
<http://www.iomega.com>

Quantum
(800) 624-5545
(408) 894-4000
<http://www.quantum.com>

SyQuest
(800) 245-CART
(510) 226-4000
<http://www.syquest.com>

EDLIN Alternatives

Before Microsoft added a real text editor to MS-DOS in version 5.0, editing system files was tedious at best. Until MS-DOS 5.0, EDLIN (short for Edit Line) was the packaged means of altering configuration files such as Autoexec.bat and Config.sys. EDLIN displays files one line at a time without letting the user scroll up through previous lines, making it difficult both to read and work with files longer than five to 10 lines. Users that know exactly which lines to change have little difficulty with EDLIN. But for anyone who needs to look through the information available and decide from there, editing can be a long process.

The good news is that you don't need to use the editor provided with the operating system to edit your system files. DOS is more versatile than it's generally given credit for, and system files can be converted into a simple text file that can be viewed and changed by an imported editor or a simple word processor. You can use a word processor, such as *WordPerfect* 5.1, or you can

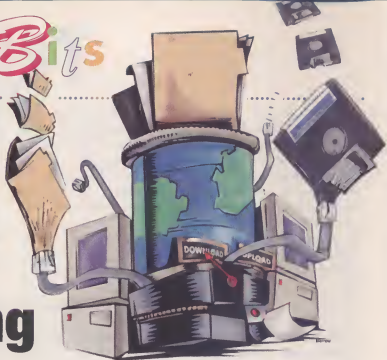
locate another compatible editor and install it on your machine.

If you already have a word processor on your system, all you need to do is open the file. In *WordPerfect*, press F5 as you would to open a regular *WordPerfect* file. Open the root directory and select the system file you wish to modify. *WordPerfect* will make the necessary formatting adjustments automatically.

The word processor gives you a much clearer picture of your system files, but you don't need to add a word processor just to edit system files. Another alternative is to add a DOS-compatible editor. This will take up much less space on your hard drive and serve this specialized purpose just as well.

We went online and found a list of several editors at <ftp://ftp.ifcss.org/pub/software/dos/editor>. We downloaded three: *An-Editor*, *Qwikedit*, & Sam Houston State University's editor. We tried them out on our 8088 running DOS 3.3. All three worked as advertised, installing only one file on the hard drive and taking up minimal space. □

The Art Of Uploading & Downloading



If you've been online for more than five minutes, you know you'll eventually find a file you want to download or that there will be something you want to contribute through an upload. But you also know that some large files can take an hour or more to transfer, and you're not quite sure you want to spend a lot of money in connect-time charges.

Fortunately, there are some things you can do to speed up your uploads and downloads. But before getting into that, we should discuss the difference between uploading and downloading and explain the process for both the Internet and online services. When you **download** a file, you transfer it from a remote computer to your own via modem. These files vary in size from only a few kilobytes to many megabytes. **Uploading** is the opposite of downloading, in which you copy files from your PC onto another computer so others can access them.

■ On Online Services.

These two processes differ depending upon what part of the online world you're accessing—the Internet or an online service. If you wanted to upload a graphics file onto an E-mail message in CompuServe, for example, you

would just click the Attach button after typing your message and select the file you wanted to send.

Users also can upload files into forums, which is click-of-the-mouse simple if users know how to navigate their operating systems, says Jeff Shafer, a CompuServe corporate spokesperson. You just enter the forum where you want to place the files and click the area that lets you submit a file. The one hitch to uploading files into a forum is being sure the files are in the right location. For example, at CompuServe, there are sysops (system operators) that determine whether the material being uploaded belongs in the forum the user is choosing. If it doesn't, the sysops tell the user which forum the files need to be in. On Prodigy, human eyes never see text being uploaded; a machine just scans it for "dirty" words.

Another catch is that the files being uploaded "can't be obscene, they can't be illegal, and they can't be considered offensive," Shafer says. This policy is the same on America Online. An upload can be refused by the online service for containing obscene material or if the file is commercial software. Files containing child pornography are one upload that falls into the obscene category.

Downloading is also easy on the online services. To download a file connected to an E-mail message on CompuServe, just click Retrieve and choose where you want the file placed.

As for downloading files from a forum, the newest version of *CompuServe Information Manager*, version 3.0, contains a To Do List feature, which lets you mark certain files in forums for download, Shafer says. Then, at the end of your online session, you just tell CompuServe to "go do everything," and it downloads all of the marked files to your machine. Almost anything can be downloaded, from new software to a picture of a puppy, as long as the receiver's system is powerful enough to handle the file.

■ **On The Internet.** Uploading and downloading is a little trickier on the Internet, mainly because this medium isn't always as user-friendly as the online services. The World Wide Web, however, has begun to make the upload/download process easier with its point-and-click interface.

As far as uploading goes, most users will have to switch to an FTP, or file-transfer protocol, site in order to do this because most Web sites don't allow uploading. FTP is a text-based method of

transferring files. Most FTP sites contain either shareware (software for which you pay a registration fee) or freeware (meaning the program is free but still remains copyrighted).

According to Sam Knox, an online services engineer with Hayes Microcomputer Products, if "Net users want to upload something to the Internet, they create a Web page and upload the entire thing to a Web server."

"All Web sites are giant Web servers that just give you information. Very rarely do they take anything from you," Knox says.

On the flip side is downloading. Netizens can download anything from the Internet, from a single file to an entire Web page. If you want to download a Web page, you just choose the Save As option in your Web browser and place the file somewhere on your hard drive. Of course, all hyperlinks (links that take you to related Web sites) would become inactive.

Downloading files can be more difficult for an Internet newbie, but once you get the hang of it, the process is relatively painless. To show you how easy it is, we'll walk you through the process of downloading a Christmas screen saver using Win95 and the *Microsoft Internet Explorer* Web browser:

1 Log on to your Internet Service Provider (ISP) and open Explorer.

2 To find a Web site containing screen savers, use a search service. We used Yahoo! (<http://www.yahoo.com>) and found a site called Screen Savers From A To Z (<http://www.sirius.com/~ratloaf/>).

3 Enter that Web address into your browser and wait while the page is called up. It may take a few minutes, depending upon phone line use and time of day.

4 Once you get to the Web site, you either can choose a letter of the alphabet to search if you're looking for something specific or choose to download one of the 10 newest screen savers that have been added to the page. This top 10 list is found right on Screen Savers' home page so you won't have to search for it.

We chose to go to the letter S because we wanted to download a screen saver of Santa Claus. We found two and decided to download both to see how long it took to download different-sized files in the morning using a 28.8 kilobits per second (Kbps) modem. One file was called Santascr.zip and was only 24.4KB. It took less than a minute to download. (The .ZIP file extension indicates that the file is compressed to speed transmission time and must be decompressed before use.) The other file, called Santa3.zip, was 533KB, and the download took around 10 minutes. (NOTE: These two screen savers are for Windows 3.x and not Win95. However, most Windows 3.x screen savers should work with Win95.)

5 To download the screen saver, right-click the file you want to save. A dialog list box will appear; choose Save Target As from the list.

6 A Save As dialog box will appear. Choose where you want the screen saver to be saved after it's downloaded. We chose

to put it in our DESKTOP folder so it would appear as an icon on the Desktop when it finished downloading.

7 We left-clicked OK after choosing the folder. A File Download dialog box then appeared, showing pieces of paper being transferred from one folder to another. When the zipped file finished downloading, the icon was on the Desktop.

8 Double left-click the icon, and a dialog box for the WinZip compression/decompression utility appeared. (NOTE: If you don't have WinZip on your system, you can go to <http://www.winzip.com> to get a shareware copy.) You'll need to select all of the files in order to unzip them. Choose Select All from the Actions menu. Once the files are highlighted, left-click Extract.

9 Select the folder where you want the extracted files to be saved. We chose to put them in our TEMP directory. Once the files are saved, you'll need to open that directory and left-click the Setup.exe file to run it. Setup walks you through the steps of installing the screen saver in your WINDOWS directory.

10 To find the screen saver, open Display in Control Panel, left-click the Screen Saver tab, and scroll through the choices until you find Santa. Activate this screen saver just like any other.

■ Time-saving Tips. Now that you know how to upload and download, here are some tips to help maximize your online time.

- Use a 28.8Kbps or 33.6Kbps modem. Most Web pages contain more graphics than ever before. If you want to download one of these pages, the faster your modem, the less time you're on-line.

- Upload and download during non-peak times. According to Hayes' Knox, Internet usage peaks between 6 p.m. and 9 p.m. daily. (The weekends are busy times as well.) He says that it's hard to download during peak times because an unlimited amount of people are trying to use a limited amount of bandwidth, or network capacity, slowing things down.

- Remember that if you're trying to download a popular file, such as the new version of Internet Explorer, and it's taking a long time, several other people may be trying to download the same file. Be patient.

- Upload and download compressed (zipped) files. For information on unzipping files with WinZip, see the sidebar "Using WinZip."

- Use a program such as FreeLoader or WebWhacker, which logs on to the Internet, downloads the pages you specify to your hard drive, and then logs off. That way, you can browse pages at your leisure without spending a lot of money.

- Pay attention to where you're downloading from on an online service; some areas have extra charges for downloading certain items.

- Use the download management features offered by some online services. These features let you mark specific files for download and specify a time so you can download when rates are cheaper.

All in all, when it comes to uploading/downloading, there is no right or wrong answer. If you don't mind paying extra and spending time online, it won't matter when you upload/download. If these things do matter, use our tips to get started down the road to shorter (and less expensive) online sessions. ■

by Juliet Oseka

Using WinZip

In order to open those zipped files you download off the Internet, you need to use a file decompression program, such as Nico Mak Computing's WinZip. Here's how to unzip using this Windows 3.x product:

1. Open WinZip and follow the on-screen directions.
2. In the WinZip Wizard—Search dialog box, choose where you want to search to find the zipped file and click OK. We chose Search Disk and the A: drive to find the file on diskette.
3. Once the zipped file is found, double-click it to begin the unzipping.
4. Decide where you want to place the unzipped files by clicking Select Different Folder. Once you've done that, click Unzip Now.
5. When the program is finished unzipping the file, a message will appear. Click Close.

You're now ready to take a look at what you downloaded. □



Need help with your hardware or software?

Looking for simple explanations on technical subjects?

Send us your questions!

DOS

DOS COMPUTING

Q: I recently installed a new 528MB IDE hard drive on my ancient XT computer (replacing the old MFEM hard drive). After some software configuration, I got everything running again under DOS 6.22. But occasionally the system stops, and I get the message, "Cannot load COMMAND.COM. System Halted." What can I do?

A: Command.com is one of the basic files that DOS needs to run. Normally, it's loaded into memory for the duration of a day's computing the first time you turn on your computer. However, during certain operations, DOS is forced to briefly look on the hard drive and reload Command.com (sort of like you looking in your wallet to check your bank card PIN when you forget it). If anything interferes at that point with a successful reload of Command.com, you'll get the message you're seeing.

Unfortunately, there are many reasons why this happens, and we can't be sure what's causing your problems. Fortunately, there are two simple solutions that may work. One is to put a new copy of Command.com in the root directory on your C: drive by getting to a DOS prompt and typing these commands (each followed by the ENTER key):

```
c:
cd \
attrib -r command.com
(This removes the write-protection from the file.)
copy c:\dos\command.com c:\
```

The second solution is to use the DOS EDIT command or the Windows Notepad to edit your Config.sys file. If you find a line beginning with Shell=, place rem in front of it (to disable it) and enter this line:

```
shell=c:\dos\command.com c:\dos\ /e:1024 /p
```

This tells DOS that when it needs to find a copy of Command.com, it should look in your DOS directory.

Q: I have DOS 5.0. I was thinking of upgrading to DOS 6.2 but am short of disk space. I hear DOS 6.2 can take up to 6MB. Is this true? Should I upgrade?

A: Yes, DOS 6.2 can take that much space, but much of it is all of the extras (backup programs, disk compression utilities, antivirus programs, ScanDisk, Defrag, etc.). You can install DOS 6.20 or 6.22 by typing setup /m, which tells DOS to install only a minimal copy of the program. This way, the program only takes about 2MB, which is about the same as a full version of DOS 5.0.

Don't forget to run the DELOLDOS command to remove the old copy of DOS 5.0, or you'll still be wasting space. (Many users forget to do this, and the old DOS hangs around forever.) DOS 6.2 installed in the minimal manner would be missing several of its features but still would have some noteworthy ones left, such as better memory management, better disk caching (SmartDrive), etc.



WINDOWS 3.1

Q: I'd like to keep Windows for Workgroups 3.11 (WFW) and still be able to run Windows 95. Rather than going with a dual-boot system, I'm considering a second hard drive that would have ONLY Win95 and its applications installed. I'd appreciate any suggestions you have as to the feasibility of this, how to set it up, and what operational problems this might create.

A: There are several ways to set up a dual-boot system (for alternately running Windows 3.1 and Win95), each with its pros and cons. Setting up two separate hard drives could be a good way to make sure the two somewhat-incompatible systems don't step on each other's toes. But you'd still have to have some sort of dual (alternate) boot system that decided which drive would be in charge of the system at any given time. Though there are sometimes good reasons to run both Windows 3.1 and Win95, our advice is to stick with one or the other if you possibly can. Setting up a dual-boot system can be tricky, but once it's configured properly, it shouldn't be too difficult to live with. (For more information on dual-booting, see the September 1996 issue of PC Novice.)

Q: When I was running Windows 3.1, it indicated correctly that I had 325MB free and 850MB of total drive space, as well as 1.44MB of total space on my diskette. CHKDSK gave about the same reading. But when I installed WFW 3.11, File Manager indicated that I only had about 307MB free and 812MB of total drive space, and only 1.38MB on the diskette. Even after accounting for the fact that WFW takes up a little more space than Windows 3.1, these numbers don't add up. Where did my space go?

WINDOWS 3.1 (cont.)



A: There's no real problem here. Simply put, you, and Windows 3.1's File Manager, were defining 1MB as 1,000KB, while WFW 3.11 uses the more officially correct rules that say 1,024 bytes equals 1KB and that it takes 1,024KB to make 1MB.

If you take the numbers reported by CHKDSK and divide the bytes by 1,024 to get the kilobytes and then divide the kilobytes by 1,024 to get megabytes, you'll see that you get the same figures that File Manager reports, except for a tiny "rounding off" difference.

Incidentally, drive manufacturers like to define a megabyte as 1,000KB because that way, a drive can be sold as, say, 850MB instead of 812MB. The important thing is, rather than worrying about which system is correct, just recognize that whatever space you have left is what you have left. It's like arguing over whether you have one gallon or 3.789 liters of gas in your car's tank; whatever you call it, when the tank is empty, you still have to find a gas station.



Start

WINDOWS 95

Q: I noticed there is a hidden directory called SYSBACKUP in my WIN95 directory. It showed up when I selected the Show All Files option in Explorer. It contains about 2.5MB of files. Is this a critical or useful file or just trash left there during an upgrade of software?

A: Win95's installation procedure creates this directory. In it are spare copies of some files critical to Win95. During Win95's normal startup, it checks to see whether the original copies of these files are in the system directories. If the operating system detects that they've changed, it usually puts up a warning and offers to restore the original from this backup directory. Unless you keep a full backup of your system and are sure it's really complete, it makes as little sense to remove these files as it does to throw out your car's spare tire.

Q: Some time ago, you mentioned the WFW 3.11 special keyboard setting in Control Panel called International, which is useful for easily typing foreign characters, such as "ñ." I'm now running Win95 and can't find out whether it has that same feature available or how to activate it.

A: This feature is indeed useful, and Win95 does have it. Left-click Start, then Settings, and finally Control Panel. In the Control Panel dialog box, double left-click Keyboard, left-click the Language tab, then left-click Properties. This should get you a dialog box called Language Properties. Find the drop-down list of keyboard layouts; United States—International can be found there.

The United States—International choice leaves most keys where a U.S. typist would expect to find them but still makes it easy to get non-English characters. The right ALT key pressed with certain characters "shifts" them to international characters. For example, ALT-N gives "ñ," etc. This feature also has the "dead" keys a European typist expects to find for putting accents over characters: hitting ', ^, or ' seems to do nothing, but if you next press, say, the E, you get "é." If followed by a space or a character that never gets an accent mark, the "dead" character prints normally.

Q: Many copies of a file named Mscrate.dir are appearing all over my hard drive. Can I safely delete them? Where are they coming from?

A: Mscrate.dir is made by Win95 during a program's installation. It lists what directories were created by the new program so later, when you use Win95's Uninstall utility, it can do a better job of telling what directories, etc., were created by the program. Specifically, it lets the uninstaller delete any empty leftover directories. You can delete these files with no immediate problems, but if you later run an uninstall from the Add/Remove Programs function in Win95, you might need to manually delete any empty directories.



UTILITIES

Q: You ran an article in your March 1996 issue about the problems with computer programs that weren't designed to handle a date beyond 1999 and how the industry is dealing with these problems. But you didn't say anything about what regular users will do to set their system date to the year 2000. I tried running the DOS DATE command and entered 1-1-00; I got back "invalid date."

A: To enter a date with the year 2000 in DOS, you would just enter it in the form of 1-1-2000, and your computer will accept it. You can set the date in Windows by opening Control Panel's Date icon; Windows even will accept the date as 1-1-00.



ONLINE COMMUNICATIONS

Q: I'm trying to figure out what this "Internet" is. I'm told that there's the Internet and the World Wide Web. Is there any single place to find out the structure of this whole thing and what kind of information is available?

A: Your confusion is understandable so we'll try to clear things up for you. The Internet is one loosely



ONLINE COMMUNICATIONS (cont.)

connected worldwide network that links smaller networks and individual computers using modems, phone lines, and satellite links. The Internet, commonly known as the 'Net, lets people communicate with other users through electronic mail (E-mail) and real-time typed conversations, which is known as IRC, or Internet Relay Chat. The 'Net was created in 1969 by the U.S. Department of Defense in order to allow government communications to continue in the event of a natural disaster or armed conflict.

The World Wide Web, a.k.a. the Web, is just a part of the Internet. The Web was conceived in Europe as a way to enhance communications between scientists and didn't become popular until about 1993. The difference between the Internet and the Web is that while the Internet is text-based, meaning users have to navigate through text-only screens, the Web contains a graphical interface that lets users click icons and hyperlinks to switch from Web page to Web page. If you want more information on the Internet, you can read our October 1996 issue, which was devoted to this communications network, or look for *PC Novice's Guide To The Internet*, which can be found on most newsstands in early November. For more information, call (800) 367-7333.

Q: *I'm going to Europe and need telephone plug adapters that will let my laptop's modem plug into oddball phone jacks. Does anyone sell these adapters?*

A: Try TeleAdapt Inc., Heritage Village, 51 E. Campbell Ave., Campbell, CA 95008. Its phone number is (408) 370-5105, its CompuServe address is 72623.706@compuserve.com, and its Internet address is teleadapt@delphi.com.

COMPUTER HARDWARE

Q: *I heard rumors that speed claims by Cyrix for their P166 686 CPUs (and other members of that Pentium family) are overinflated—or at least misleadingly benchmarked. What's the scoop? Are these largely rumors started by Intel?*

A: Cyrix and the three other non-Intel CPU makers are championing the "P rating," which attempts to report CPU performance as the equivalent of the nearest-performing Intel Pentium CPU. Needless to say, Intel claims the P rating is misleading and confusing.

From our research, Cyrix's use of the P166 rating (on a chip that actually runs at 133MHz) is more or less valid; it does profile average business use performance. Different CPUs have different areas of function where they will be a bit weaker or a bit stronger.

What you might be referring to is that the Cyrix CPU is a bit weak for doing what's called **floating point math**, which is used extensively in some graphical games because these games require the decimal point to "float" in equations whenever players move their viewpoint. In particular, there's a game from id Software called *Quake* that reportedly runs slower on a Cyrix P166 than on an Intel Pentium 166. On the other hand, despite significant use of floating point math, Autodesk's *AutoCAD* program runs a tiny bit faster with the Cyrix P166 chip than with a Pentium 166. Therefore, CPU makers use the benchmarks that show them in the best light.

Q: *I have a 486 IBM 350 and am about to buy more RAM for it. Should I get parity or nonparity RAM SIMMs? And what's the difference?*

A: We explained what parity checking is in our June 1996 Q&A column, but we'll give you a brief recap here. In short, parity checking is a way of discovering whether an item in RAM may have been accidentally altered. On parity RAM, each single in-line memory module (SIMM) has an extra memory chip whose sole function is this parity checking. Parity RAM is a weird animal. On the rare occasions when a parity check does fail, it reports the problem in a really nasty way (i.e., "System Error. Memory parity error detected. System Halted."), and the cure may be worse than the disease. You see, this error message doesn't give you the option of saving your work before rebooting, and truthfully, the parity error may have only caused one character or pixel on-screen to be wrong. This would either do no harm or could be brought to your attention in a less serious way. Newer Pentiums don't use that extra parity chip because they do their error checking differently.

You can put nonparity RAM in your older computer and it'll probably work, but since your PC was probably designed with parity RAM in mind, you may want to stick with it. You also can put parity RAM into a new computer that doesn't use parity checking and it'll run, but you're just wasting your money. (Parity RAM costs more than nonparity RAM.) The one thing you *should not* do is mix the two types in one computer; that can cause serious problems that are difficult to pin down.

PRINTERS

Q: *I bought my HP-5L printer when it first came out, and, even though I'm only using its basic PCL driver (and not the fancy printer control software) under WFW 3.11, I still get occasional General Protection Faults (GPFs) that lock up the system. These are specifically associated with printing certain files (usually graphics). When that happens, I can always get around the problem by simply not using the 5L drivers; I lie to Windows (Printer Setup) and use the*

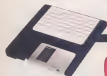


PRINTERS (cont.)



older HP-III drivers I still have from my last HP printer. This works fine, except I lose the 600dpi, so it's a workaround, not a solution. Are there newer HP-5L drivers that will cure this problem? The files on my HP-5L driver diskette are dated 07-07-95.

A: Keeping an older set of related printer drivers around for such emergencies is a good practice. And you're right that updating printer drivers can sometimes cure printer-related GPFs and other printer problems. Your driver is version 1.0. A PCL driver (version 1.20) for your printer and an updated Status Window and host-based driver are all available from Hewlett-Packard by calling (970) 339-7009. You also can visit the HP Web site at <http://www.hp.com/go/cposupport> to get the drivers, or you can download them from the CompuServe HPLASER forum library.



MISCELLANEOUS SOFTWARE

Q: My questions are about the TurboTax program. I used it for 1995 and want to buy it again for 1996, but I'm thinking about getting the Deluxe version this year because of a few features it offers. The problem is, though it's designed for sound, I don't have a sound card, and I'm short on hard drive space. Is this still a reasonable choice?

A: Some multimedia programs on CD-ROM do refuse to install, or run, if you don't have a sound card. But TurboTax's 1995 version (and we presume the 1996 version) will install and run without a sound card. We have one other piece of good news for you: Even without a sound card, you probably can still get all of the sounds. Many CD-ROM drives have a sound plug on their back or front; if you plug a set of headphones into your CD-ROM drive, you probably can hear all of the sounds that go with the videos in the program.

As for space: Though CD-ROM-based software typically takes large amounts of space, TurboTax Deluxe actually gives you the option of using less of your limited hard drive space than the regular diskette version. You see, the Deluxe (CD-ROM) version has an option during installation that offers to keep most of its files on the CD-ROM. That way, it only takes about 5MB of space (compared to 7MB for the diskette version). With this method, however, you have to insert the CD-ROM into your CD-ROM drive to run the program, and it runs a little slower. If you install all of the files on your hard drive, it takes about 20MB.

Q: Whatever happened to the company that made the Twin spreadsheet? My ancient (1987) version of Twin won't run reliably under Win95, and I need to convert my old spreadsheet files to Lotus 1-2-3. Is there a way to get Lotus 1-2-3 to convert to its format?

A: Twin's maker, Mosaic Software Inc. (no relation to the Mosaic Web browser), was sued by Lotus and went out of business about 1989. Lotus claimed that Mosaic Software was illegally imitating Lotus' "look and feel" in Twin. To this day, there are still people who will tell you that, though Mosaic Software was indeed imitating Lotus, the court decision to allow Lotus to shut Mosaic Software down was unjustified and bad for the software industry. Their argument is that if "look and feel" were able to be patented, the first car that had the gas pedal, brake, shift lever, and steering wheel positioned where they are today could have prevented all other makers from doing the same.

You can't get Lotus 1-2-3 to read your Twin spreadsheets, but you can get Twin to convert them to Lotus 1-2-3 format. To do this, you'll need to exit out of Win95 totally; this should probably get Twin to behave itself temporarily (long enough to do the converting you need to do). During Win95's shutdown, tell it to Go To DOS rather than just shut down. The important thing to remember is that you can't be running a DOS window through Win95; you must be at a raw DOS prompt to get this to work. Once you get Twin running, open the spreadsheet you want to convert and press / F T (File, Translate). Then select 1-2-3 as the choice to convert to.

If your file was called TWIN\Budget96.wtk, Twin will be trying to place the newly converted file in the TWIN directory under the name Budget96.wks. This is fine, except that you might want to send the file to a different directory such as LOTUS because you'll probably want to delete the TWIN directory and not your newly converted spreadsheets.

The format that the file will be translated to is one that early versions of Lotus 1-2-3 used. But don't worry about that; nearly all modern spreadsheets, including recent versions of Lotus, can successfully load and read a spreadsheet in that old Lotus format.

UPDATES:

In our October Q&A, we mentioned that the *Windows 95 Service Pack 1* was available for free at various online sources but also said that it couldn't be obtained directly from Microsoft. It turns out that you can get it from Microsoft by calling (800) 360-7561. The product costs \$15 and can be purchased in a diskette or CD-ROM version. If you buy the product directly from Microsoft, you also receive the most current version of every driver the company makes. ■

Get straight answers to your technical questions. Ask PC Novice! Send your questions, along with a phone and/or fax number so we can call you if necessary, to: PC Novice Q&A, P.O. Box 85380, Lincoln, NE 68501. Please include all version numbers for all software about which you're inquiring, operating system information, and any relevant information about your system. (Volume prohibits individual replies.)



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ACTION



EDITOR

When Ralph Nader can't be reached, bring your computer service problems to our Action Editor column. This page will help you find products, resolve service problems, and keep manufacturers alert to the critical issue of customer relations.

Are you having trouble finding a product or getting adequate service from a manufacturer? If so, we want to help solve your problem. Send us a description of the product you're seeking or the problem you've had with customer service. In billing disputes, include relevant information (such as account numbers or screen name for online services) and photocopies of checks. Include your phone number in case we need to contact you. Letters may be edited for length and clarity; volume prohibits individual reply. Write to:

Action Editor
P.O. Box 85380
Lincoln, NE 68501-5380

or
Send E-mail to 74644.3017@compuserve.com

or
Fax us at (402) 479-2104

Dear Action Editor:

I purchased an IBM Aptiva computer Oct. 13, 1995. I have experienced a problem with the monitor always flickering. I have reported this problem several times. The technicians believe the problem might be caused by a faulty cable. I was promised immediate delivery of another cable. It arrived about two months later.

When I installed the new cable, it cleared up the problem. However, the replacement cable is about a foot shorter than the original cable. Now the computer, which is housed in a workstation, cannot be properly situated.

I have called IBM several times about this problem. Can you help me?

Edith Weedo
Nutley, NJ

We contacted an IBM public relations representative who said her records showed that the correct cable had been sent out three times already. But she said she'd personally send a new one with a tracking number to ensure that it arrived. A few days later, the representative said she'd called the customer and checked the case's history by looking at Edith's previous phone calls.

We found that IBM has made good-faith efforts to solve the problem throughout. When the first cable was ordered, for example, the part was on back order. So an IBM representative took a cable off one of the office machines and sent it to Edith.

The public relations rep said there is only one length of cable manufactured for Edith's machine. It's possible a longer cable was mistakenly bundled with the computer originally.

The IBM rep suggested that in order to avoid these kinds of mix-ups, customers should always read the part number off a part when ordering a replacement. That way, customer service reps can make sure you have the right part to begin with, and you can confirm when the replacement part arrives that its number matches the original part.

Dear Action Editor:

I ordered online from Netscape, Netscape Navigator 2.0 + Subscription. It cost me \$70, which I used my credit card to pay for.

About 10 days later, it came in the mail. Before I took the plastic off, I noticed it was a Macintosh version. I need IBM. I mailed the software back with the form provided. I still haven't received my software. The credit card bill was paid last month.

I have corresponded with two Netscape people by E-mail. The last one told me to check by phone on my order status. I wrote back and said, "Why don't you do that?" She wrote back and said I would hear from her the next day. Since then, nothing has happened. Can you help me in this matter?

Craig J. Müller
Hollidaysburg, PA

We explained Craig's problem to a Netscape representative, who said she'd promptly send the correct version out to him. Craig confirmed that within a couple of days of our original phone call, the correct software had arrived.

Dear Action Editor:

I have never come across anyone who will help consumers with problems the way you do.

I'm having trouble with equipment I can't use because of a problem the suppliers are doing nothing to correct. Attached are copies of the correspondence I have had with the suppliers, Tiger Software and Number Nine Visual Technology.

While making backup copies of installation and utility disks I received with a Number Nine video board purchased from Tiger Direct, I was unable to copy Installation Disk 2. Several attempts were made to complete this copy after cleaning the diskette drive, but I was unable to go farther than the copy error. Other diskettes were copied without problem.

I returned the diskettes, and I'm still waiting for a response about six months later. I've never been so frustrated by the total lack of response by suppliers and don't know what to do about it. The video board has ceased to be any kind of bargain when the telephone tolls and postage have been added to the original cost.

I hope you might be able to intervene in this problem and get some response from the suppliers.

Lloyd H. Vollman
Manila, AR

We called Number Nine Visual and, after getting past a stubborn operator, talked to a marketing representative who promised to send new diskettes to Lloyd right away. When we talked to Lloyd a couple of weeks later, he confirmed that the diskettes had arrived in express mail, but that no other communication was included in the package. ■



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GLOSSARY

Of Terms

Batch File—A file containing a sequence of commands that are carried out in order when the file is run. In MS-DOS, batch files have the .BAT extension. An example of a batch file is Autoexec.bat.

Cache—A memory area where the CPU can quickly access frequently used data. Cache memory helps speed up a computer.

CD-ROM—Compact Disc, Read-only Memory. A form of data storage that uses laser optics rather than magnetic means for reading data from the disc. CD-ROMs only can be read by a CD-ROM drive; they can't be written to.

CPU—Central Processing Unit. The "brain" of the computer. The type of CPU, or microprocessor, that a computer has determines what type of system it is. 80386, 80486, and the Pentium are all processor chips, or CPUs.

Device Drivers—Software designed to control a particular hardware device, such as a monitor or a printer. These drivers act as go-betweens for programs and devices, ensuring the devices understand the software's commands.

dpi—Dots Per Inch. A measurement of the resolution of printed images. The more dpi, the higher the resolution and the sharper the image.

DVSD—Digital Simultaneous Voice and Data. These types of modems can transmit both data and sound over a telephone line at one time, as opposed to ordinary modems that only allow data transmission. These modems split the transmission, so two-thirds is used for data, and one-third is used for voice. However, both users must have DVSD modems for this technology to work.

DVD—Digital Video Disc. A new type of storage technology for high-density discs that can hold from 4.7GB to 17GB of information. A DVD disc can, for example, store a full-length film.

FTP—File-transfer Protocol. A standardized, text-based method of transferring files over telephone lines from one computer to another.

GB—Gigabyte. A unit of computer storage equaling approximately one billion bytes.

Hyperlink—A World Wide Web connection that users click to move to a related page or page segment.

ISDN—Integrated Services Digital Network. A type of online connection that speeds up data transmission by handling information in a digital form. Traditional modem communications translate a computer's digital data into an analog form before sending it across phone lines. The data then is translated back into digital form on the receiving end.

IRC—Internet Relay Chat. A type of interactive conversation on the Internet using real-time communication. IRC is similar to a conference call in that a group of people are talking (typing) and listening (reading) at the same time.

ISP—Internet Service Provider. Also known as Internet access providers, these companies work as gateways to the Internet. ISPs, unlike commercial online services, provide only a direct Internet connection without the instructions or interest catalogs that help users navigate through the available information. Subscribers pay the ISP a fee (usually lower than that of commercial online services) for the connection to the Internet.

Kbps—Kilobits Per Second. A unit of measurement for modems that indicates the speed at which data is transferred over phone lines. One kilobit is equal to 1,000 bits.

MB—Megabyte. A unit of computer storage equaling about one million bytes.

Microprocessor—An integrated circuit containing all the central processing functions

of a computer; also called a central processing unit (CPU).

RAM—Random-access Memory. The temporary memory storage area used to load program instructions and store files currently in use. Unless a file is permanently stored on a hard drive, diskette, or other storage medium, changes to information stored in RAM will be lost when the computer is turned off.

Resolution—A measurement, usually in dots per inch (dpi), of the sharpness of an image generated by a printer or monitor. Higher resolutions yield clearer images; lower resolutions make images appear coarse and out of focus.

SCSI—Small Computer System Interface. Used for connecting a computer to peripheral devices (such as CD-ROM drives or printers), other PCs, and local-area networks (LANs). Peripheral devices are attached to a single SCSI port through a series of connections called a daisy chain. Each device is assigned a priority number. Transmissions through the port only occur one device at a time, and peripherals with the highest priority number are the first in line.

SCSI-2—A new and improved SCSI that's designed to correct some of the compatibility problems present in its predecessor.

TSRs—Terminate-and-stay-resident Programs. These programs, usually used in DOS, are loaded into memory and pop up when certain hotkeys are pressed.

VAR—Value-added Reseller. A computer reseller that includes personalized service as part of the sales package. A VAR is typically a local specialty store that provides in-store service after the sale. The additional care means prices higher than those found at the average electronics store.

Virus—An executable file that replicates and attaches itself to other executable files in an unsolicited manner.

Underachievers Beware

Want To Cheat Yourself? Get Smug In Your PC Knowledge

How much of the purchase price of your computer was wasted? One-third? Two-thirds? If you're a typical PC user, you're throwing at least some of your investment out the window, and it's not because of the overhyped problem of obsolescence.

It happens because you've grown content too early.

You just don't know how good you can be. You mastered the skills in the first chapters of all your user manuals and sat back to marvel at how far you'd come since last year.

Think it doesn't happen to you? Consider the last demonstration of a new software package you saw at a store or at a friend's place. Remember the great text effects, multimedia editing, and home financial reports that user conjured up? Remember how many of the same features you ever used once you bought the software and started using it? As you started working with the package, your learning curve probably shot up over the course of the first several sessions. But then it began to plateau as you basked (perhaps even subconsciously) in the knowledge that you could do more than you ever dreamed last week. Never mind that 80% of the features are still off your radar.

OK, say you're still content with your skill level. Are you sure your audience is content with projects created with basic skills? (If you don't think you have an audience, think seriously about who sees the output from your PC. We bet it includes more than just you.)

Company fliers that look like they were created with your elementary teacher's mimeograph machine and clip art collection don't cut it anymore. If you think it was hard keeping up with the Joneses when it came to dinner parties and lawn care, consider computer projects. Few of us are expected to cook like Wolfgang Puck or grow lawns like fairways, but the world around us has grown spoiled on a steady diet of well-designed information packages. And the accessibility of personal computers means anyone with a little cash and a lot of practice can deliver presentations that could be slipped into corporate reports without much notice.

If you're satisfied to meander around your computer or remain slightly baffled by File Manager, you're in danger of falling behind. The resources available to anyone with a PC



mean the general audience can reject subpar submissions as evidence of either an unskilled or lazy creator. Consider:

- An artless newsletter that looks like it was typed on a 1975 Smith Corona and pasted together in the basement. If the author didn't care enough to use basic word processor features

such as font choice, picture usage, and arranging text in columns, readers won't care enough to read the information. Of course, this assumes the newsletter even caught a reader's eye long enough to get this much consideration.

- A business presentation using posterboard and pointer. How many potential clients will be as impressed with this as with a computerized presentation complete with animation and transition effects?
- A financial package presented in a spreadsheet. Will those figures sink in like numbers presented in an assembly of charts and graphs?

The same situation applies to current information (the latest is on the Internet), home videos (\$200 packages offer professional-style editing), and any other data sent out to represent you, whether among business associates or friends.

But don't be frightened by this talk of wasted dollars and cutthroat informational competition. They're really good things. It should motivate you to get the most from that computer investment you made on the order of several thousand dollars. You paid for this machine; why not wring every bit of productivity from it?

Sure, it can still be a small thrill every time you just get a document to print correctly. But subsistence computing will never make you the true master of the PC. Just think where'd you be today if, as a new driver, you'd breathed a sigh of relief and found contentment when you got the car started and backed out of the driveway. "That's enough," you could have said. "I'm just a dummy when it comes to these things."

That wasn't an option with cars, and it shouldn't be with your computer. The only dummies are those who think their computing education has an endpoint. ■

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